

The Milbank Memorial Fund  
**QUARTERLY**

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## IN THIS ISSUE

AMONG the important questions facing the public health administrator today are those concerning the adequacy of present sanatorium facilities for the tuberculous and the proper expansion of the functions of the sanatorium. Consequently, the article "The Role of the Sanatorium in Tuberculosis Control," by Dr. Alton S. Pope, Director of the Division of Tuberculosis of the Massachusetts Department of Public Health, is timely and of especial interest. Dr. Pope describes the evolution of the modern sanatorium and discusses its present broadening functions and the economic aspects of hospitalization of the tuberculous. He points out also the advisability of a more complete integration of the sanatorium into the broad program for the control of tuberculosis.

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The value of a critical appraisal of the work of the tuberculosis clinic which is a vital part of the public health program for the control of the disease is indicated in the article "Clinic Service in the Control of Tuberculosis" by Miss Jean Downes of the Fund's staff and Dr. A. A. Feller, Director of one of the local tuberculosis clinics of the New York City Department of Health. An important conclusion drawn from this study may be briefly summarized: An examination of the volume of clinic work alone does not fully reveal the quality of the work done; rather, the quality of the clinic work may be more accurately appraised by inquiry as to what individuals are being served by the clinic and by study of the content of the clinic examination. An appraisal such as is described in this study should be an aid to the public health administrator in planning more practical and effective procedures for the control of tuberculosis.

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In a modest and sane article, Dr. Warren S. Thompson presents the view that if a housing program is to be socially sound it must be based upon the qualitative and quantitative population needs of the nation. In "The Effect of Housing Upon Population Growth," he discusses the possible bearing of such factors as costs of housing, size of dwelling, and type of neighborhood upon size of family in the various classes of our population. More accurate knowledge of such relationships is needed so that we may not inadvertently allow a housing program to set up a train of undesired consequences relating to growth and quality of our population.

• •

Neglected in population research have been questions concerning the birth rates of individuals after they migrate from rural to urban areas. Do the pressures of urban life result in immediate and substantial curtailment of fertility of the migrants themselves or is their full force delayed until their children mature and marry? In "Birth Rates Among Rural Migrants in Cities," Clyde V. Kiser of the Fund's staff presents an analysis of some data relevant to that problem. The study is based upon material collected during the course of past surveys among native white families in Columbus and Syracuse and among native Negro families in a selected area of Harlem. Supplementing the central topic, the author comments briefly on Negro-white comparisons of birth rates and childlessness.

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The health practices of a school child are determined by many factors, and it is difficult, if not impossible, to measure adequately the influence any one factor may have had in the development of his routine for healthful living. As a part of an appraisal of a program of school health education in Cattaraugus County, an attempt has been made to study the children's health practices and to relate them to the influences of the school. The report of this study by Miss Ruth E. Grout, Director of the project, and Miss E. Genevieve Pickup, Research Associate, appears in this number. This is the third in a series of articles, "Evaluation of a Rural School Health Education Project."



## THE ROLE OF THE SANATORIUM IN TUBERCULOSIS CONTROL<sup>1</sup>

*by* ALTON S. POPE, M.D.<sup>2</sup>

THE sanatorium movement in America arose not from any preconceived idea that it might contribute to the ultimate control of tuberculosis, but rather from the belief that it offered the first substantial promise of recovery to the stricken individual and at the same time provided urgently needed care for large numbers of tuberculosis patients. It is only necessary to recall that before 1880 recovery from frank tuberculosis was looked upon as little less than an act of Providence to understand the enthusiasm with which Trudeau's experience was received by the medical profession. Here at last was a method of treatment that promised to lift the age-long fatalism that had surrounded the diagnosis of phthisis.

In spite of Koch's clear exposition of the etiology and the mode of communication of tuberculosis the concept of the infectiousness of the disease spread very slowly. The long period of incubation and the absence of a rash or other obvious sign of the onset of illness long served to mask the demonstrated facts of transmission. Even had the risks of household infection been generally accepted it is doubtful whether the early proponents of sanatorium treatment would have been impressed with the value of the hospitalization of tuberculosis as a means of limiting the spread of infection. At just about that time the "Great Towns" of England had, at great cost, completed an extensive system of "Fever Hospitals" and the disappointment of finding that the hospitalization of 80 or 90 per cent of all reported cases of diphtheria and scarlet fever had no appreciable effect on the incidence of those diseases must have

<sup>1</sup> Presented at the Round Table on Tuberculosis, Sixteenth Annual Conference of the Milbank Memorial Fund, March 29-31, 1938.

<sup>2</sup> Director of the Division of Tuberculosis, Massachusetts Department of Public Health.

served as an effective damper upon any hopes that the hospitalization of tuberculosis would be of any greater prophylactic value.

The universal emphasis upon altitude and dryness of the atmosphere as essentials in the treatment of tuberculosis at that time led to the establishment of all of the earlier sanatoria in comparatively remote mountainous areas, where inaccessibility proved a serious obstacle to their general use. This limitation was early recognized by V. Y. Bowditch, James Minot, and their associates in Boston, and the success of their pioneer efforts in the treatment of tuberculosis at sea level demonstrated the practicability of bringing the sanatorium to the patient instead of the patient to the sanatorium. The importance of this discovery to the development of the sanatorium movement is hard to over-estimate. A direct result was the establishment of the first state sanatorium in the country at Rutland, Massachusetts, in 1898. Of equal importance was the recognition of the fact that the care of the tuberculous patient is a public responsibility; for in the act establishing Rutland Sanatorium was a provision that if the patient is unable to pay the nominal charge of \$4.00 per week his care becomes the legal responsibility of the town of settlement. Thus in a single act was laid the foundation for the present dominant role of the sanatorium in tuberculosis control.

It is not without significance that the reporting of tuberculosis as a disease dangerous to the public health and other organized attempts at control lagged behind hospitalization. The chronicity of the disease and the long period of infectivity rendered the usual measures of isolation and quarantine ineffective and the popular stigma attached to tuberculosis encouraged concealment of the diagnosis. Only when it had been demonstrated that the sanatorium offered actual hope of recovery was it possible to interest patients or doctors generally in the discovery or notification of the disease. The importance of early diagnosis in the effective treatment of tuberculosis is axiomatic but even the best organized case-finding

campaign soon loses its appeal unless diagnosis offers the prospect of effective treatment. Only where health administrators have recognized the interdependence of these two major factors has the full contribution of either to tuberculosis control been realized.

#### FUNCTIONS OF THE MODERN SANATORIUM

Though intended primarily for the segregation and medical treatment of patients with active tuberculosis the modern sanatorium has taken on increasingly important related functions in the tuberculosis program. Briefly these may be outlined as follows:

1. To provide adequate medical care for the sick patient and to insure him the greatest opportunity for recovery.
2. To limit the spread of infection by effective separation of the open case from his associates.
3. Through effective treatment to render the patient noninfectious.
4. To teach the patient how to live within the limitations imposed by tuberculosis.
5. To serve as a diagnostic center for the surrounding area.

Although Pratt demonstrated thirty years ago that it was possible under favorable conditions to carry out as effective treatment for tuberculosis in the home as was then given in the sanatorium he freely admitted that comparable results could be obtained only with cooperative patients under individual direction of an interested physician and close supervision of a trained public health nurse. Obviously such ideal conditions could be secured for a very small proportion of tuberculous individuals. With the general acceptance of collapse therapy and the prerequisite of radiographic facilities for the appraisal and control of treatment, comparison between home and sanatorium care is no longer pertinent. Few physicians are now willing to accept the responsibility for care of the active case under the limitations of home and office practice, nor are informed patients often willing to accept such care in areas where modern sanatoria are available.

From the standpoint of tuberculosis control, separation of the open case from his immediate associates is the most important single step. With intelligent patients under satisfactory living conditions it is possible to carry out reasonably satisfactory isolation of the patient in his home by means of strict medical asepsis. With uncooperative patients or any degree of crowding such precautions become futile. In Massachusetts among families in which a case of active tuberculosis has been found it is estimated that approximately one family in four harbors an additional case. Removal of the original case cannot prevent the infection which has already taken place but under average home conditions it is the only guarantee that such infection will not continue.

Any treatment which leads to the arrest of tuberculous disease at the same time renders the patient noninfectious. With early cases of tuberculosis such a result was not infrequent with the use of bed rest alone. In the majority of cases, however, healing was slow and in the presence of cavities the end result of treatment in those who survived was a crippled individual who for the rest of his life was a potential source of infection to his friends and relatives. From the public health standpoint the greatest contribution of collapse therapy has been its effectiveness in rendering open cases of tuberculosis noninfectious. It must be recognized that a considerable proportion of cases are still too advanced upon diagnosis for successful collapse and that in other instances effective collapse cannot be obtained on account of adhesions, but in spite of these drawbacks collapse therapy is doing more than any other one factor to improve the chances of recovery for the individual and at the same time to make it safe for him to return to his family.

Treatment has accomplished only part of its job unless it has taught the patient how to keep well; that is, how to live within the limits imposed by his disease. Some 20 to 25 per cent of all admissions to our sanatoria are re-admissions of patients who have been discharged in good condition but who came back with re-activation

of their tuberculosis. In certain instances the relapse is unquestionably due to work beyond the individual's strength or other factors beyond his control but in many cases it is due to his failure to heed the danger signals of tuberculosis and to adjust himself to his physical limitations. Many patients with arrested tuberculosis accomplish as much as normal individuals but almost always they do so by limitation of some of their activities. Just what this concession is most patients have to determine by experience, but one of the most valuable things which the sanatorium can give its patients is an understanding of their disease sufficient to make them realize what these limitations are and the necessity for observing them.

Most well-organized sanatoria through their medical staff give regular instruction to their inmates on the natural history of tuberculosis, the essentials of treatment, the prevention of infection, and the precautions necessary for continued health. When properly presented no subject is so absorbing to the convalescent patient, and by means of the radio it is as readily presented to the bedridden as to the ambulant patient. The effects of such instruction upon the re-admission rate cannot of course be measured in mathematical terms but the frequency of disregard of all precautions in relapsed cases is sufficient to convince the clinician that patient instruction is one of the most constructive activities of the sanatorium.

The relationship of the stage of tuberculosis upon discovery to prognosis has been too convincingly demonstrated to require more than passing mention at this time but it is something that must be kept constantly in mind in the elaboration of a control program. So long as over 85 per cent of patients are suffering from moderately to far advanced disease upon admission to sanatorium any improvement in treatment is seriously limited in its application. In fact this is probably the greatest single factor in maintaining the high case fatality rate in tuberculosis. That there has been no substantial increase in the proportion of minimal cases admitted to our sana-

toria is sufficiently illustrated by the experience of the Essex County Sanatorium, Massachusetts, where the percentage of minimal cases has remained constant for the past twenty years, while the proportion of far advanced cases has slightly increased.

If the sanatorium, then, is to make its full contribution to tuberculosis control the next essential is to bring the patient earlier to its doors. With the tuberculin test, the x-ray, and the diagnostic laboratory the necessary technical aids have been provided. The problem of their most effective application still remains, and the sanatorium may in part furnish the solution. After twenty-five years of unsatisfactory experience with municipal dispensaries staffed by local practitioners, the Massachusetts Department of Health in 1931 secured the passage of a statute authorizing state and county sanatoria to maintain out-patient departments and, upon request of cities and towns in the areas served, to operate periodic diagnostic clinics in such communities. These clinics are staffed by resident physicians from the sanatoria and wherever possible are held in the out-patient departments of local general hospitals, where x-ray facilities are available. Films are furnished by the sanatorium and nursing service and records are provided by the local board of health, thus maintaining local responsibility for the supervision of patients and their families. Patients are examined on request of physicians or local boards of health and reports are made only to such doctors or boards.

Under this system complete diagnostic service is made available to all indigent patients on the same basis as diagnostic laboratory service in other diseases dangerous to the public health. At present twenty-two such consultation clinics are in operation in the State and in 1936 the Middlesex County Sanatorium alone made 6,600 examinations for 4,145 patients. Approximately 90 per cent of the family contacts of all patients admitted to the Sanatorium have been examined, 8 per cent of whom proved to have pulmonary tuberculosis. Even more significant is the fact that 55 per cent of

these cases were in a minimal stage of the disease, compared with 10 to 12 per cent of the general admissions to the Sanatorium. The success of such a system depends, of course, upon a sufficient number of well equipped and adequately staffed sanatoria, reasonably accessible to the various parts of the state. Even more it depends upon a grade of medical service which commands the confidence of the medical profession and of the public. Under these conditions the sanatorium is, outside the large cities, the organization best situated for finding tuberculosis in a stage amenable to treatment.

#### THE RATIO BETWEEN BEDS AND DEATHS

The optimum ratio of sanatorium beds to annual deaths is among tuberculosis administrators only less controversial than the interpretation of certain x-ray films. The original ideal of one bed for each annual death, so long the standard of the National Tuberculosis Association, gave way some ten years ago to a goal of two beds per death, attainment of which was to lead to the early disappearance of tuberculosis. At present some half-dozen states have reached or passed that mark and are still wondering what the desideratum really is. The fact is we are coming to recognize that there is no optimum ratio between beds and deaths and that the demand for sanatorium beds is really a function of the general adequacy of the tuberculosis service in the area in question. The better the case-finding and the higher the grade of medical care provided, the greater will be the demand for sanatorium care and the more rapidly, we have reason to believe, will the incidence of tuberculosis in the community be reduced.

If the present trends of the morbidity and mortality continue and the present rate of sanatorium construction is maintained we must in the not-too-distant future reach a saturation point in several states. Some twelve years ago we estimated that about 35 per cent of all reported cases of tuberculosis in Massachusetts received sanatorium care. Two years ago this had risen to over 65 per cent, and



with 2.5 beds per annual death for the State as a whole we still have waiting lists at several sanatoria. Obviously, the time has come when the need for sanatorium beds must be measured, not by an arbitrary ratio, but rather by the adequacy of the tuberculosis program, which to a great extent determines the number of beds which can effectively be used.

#### ECONOMIC ASPECTS OF HOSPITALIZATION

In several sections of the country the sanatorium has been unable to fulfill its essential role in tuberculosis control on account of economic reasons. In some instances because the states or counties have been financially unable to provide the necessary plants and in others because insufficient provision has been made by the community for the hospitalization of indigent patients.

To consider the second obstacle first; it is obvious that if the sanatorium is to be fully effective it must be freely available to all population groups, regardless of their financial status. This means nothing less than the underwriting of all operating costs by the community, with the realization that individual patients can repay but a small part of the total. The precedent established at Rutland forty years ago has, to a great extent, guided American sanatorium practice since that time, and when we consider that only 15 to 20 per cent of the patients in Massachusetts sanatoria can pay the direct charge, which amounts to about one-third of the actual cost of treatment, it is evident that no less inclusive provision can reach those economic groups which are still the greatest reservoirs of tuberculosis.

Nor is it enough for the community to furnish sanatorium care to all tuberculous citizens unable to provide it for themselves. One of the principal reasons that patients leave the sanatorium before the completion of treatment is worry over family problems, especially inability to meet current living expenses. In connection with the sanatorium, trained social workers have proved of great value in



the adjustment of the patients' personal and family problems, but their services cannot be wholly effective in the absence of official recognition of community responsibility for the support of the dependent families of tuberculosis patients. In most parts of the country such relief is furnished by local departments of public welfare and in the more socially-minded states it is specified that receipt of such aid shall not pauperize the recipient. A frequent point of controversy is the allocation of responsibility for the care and treatment of indigent patients who choose to remain at home or who leave the sanatorium before the completion of treatment. In Massachusetts the obligation is shared by the local boards of public health and public welfare; the former providing all medical care and treatment for the patient, including special diets if necessary, and the latter furnishing regular maintenance to the patient and family.

#### LOCAL VS. CENTRAL CONTROL

The problem of how the community can most effectively and most economically provide sanatorium facilities is too complex to admit of any single solution. In most cases the answer is bound to be conditioned by existing forms of political organization as well as by economic and medical considerations. In Massachusetts for over twenty years all public sanatoria were built and operated by the State. Then, as the demands for the hospitalization of tuberculosis increased, the state authorities, apparently appalled by the magnitude of the problem, secured the passage of a law requiring all counties and cities of 50,000 population or over to build and operate their own sanatoria or to contract with existing sanatoria for the care of their patients. As a result some twenty-five additional sanatoria were built, at least half of them too small for economical operation or high-grade medical service. At the same time a state subsidy act was passed, providing payment of \$5.00 per week to towns for each patient hospitalized in a sanatorium approved by

the State Department of Health. Intended primarily to encourage the construction of sanatoria and the hospitalization of open cases of tuberculosis, the subsidy act has been of considerable value in raising the standards of sanatorium construction and the medical treatment of the tuberculous. It also helps to maintain a local sense of responsibility for the control of tuberculosis, but from the standpoint of economy of construction and operation and quality of medical service there is no question today that the people of Massachusetts would be in a better position if they had continued the development of their sanatorium program under state management.

#### ADAPTING THE SANATORIUM TO LOCAL CONDITIONS

For the state which has recently started or is expanding its sanatorium program the same reasoning holds. A given grade of service can be provided more economically under unified control and the sanatoria can more easily be located where the need is greatest. A more difficult problem must be faced in states where the morbidity and mortality are relatively high and where neither the state nor county administrations can finance a sanatorium program. There the most promising solution seems to be the development of tuberculosis wards in local general hospitals, in association with one or more well-equipped central sanatoria. Many counties or small cities already have such general hospitals which operate with more or less empty beds a good part of the year and for that reason are faced with a perennial deficit. Wards for tuberculosis patients could be arranged at small cost and the existing x-ray plant would serve for diagnostic work on tuberculosis out-patients as well as for house patients. With a reasonable subsidy from the state to supplement the fees from the county or towns from which the tuberculosis patients come, the hospital would be assured of a steady income which should make it possible to employ a well-trained resident physician to serve both the tuberculous and the general hospital patients.

For such a set up to function effectively it is essential to have a central, up-to-date sanatorium which can receive patients for major thoracic surgery and act as a clearing house for the local hospital units. This sanatorium should also serve as a training school for resident physicians who will bring the essentials of the modern treatment of tuberculosis to the local hospitals and to the local physicians.

For the past three or four years such an arrangement has been working satisfactorily in two general hospitals in Maine and in the island of Jamaica a similar scheme, utilizing the parish hospitals, is being worked out by the Colonial Government and the International Health Board. One great advantage is the saving in initial investments for construction. Another which is less apparent but perhaps even more important is the enlistment of the interest and cooperation of the practicing physician in the treatment and prevention of tuberculosis. In the local hospital he can follow the progress of his patient and see the results of pneumothorax and other therapeutic procedures which make it seem worth while for him to try to do something about tuberculosis. At the same time easy access to the x-ray makes it possible for the doctor to recognize tuberculosis while it is curable and by routine examination of contacts to dry up some of the sources of infection. Such an organization should also provide one or more consultants from the central sanatorium to make periodic visits to the local hospitals to assist the staff in the selection of cases for thoracic surgery and to consult on other problems in diagnosis and treatment.

## CLINIC SERVICE IN THE CONTROL OF TUBERCULOSIS

by JEAN DOWNES AND A. A. FELLER, M.D.<sup>1</sup>

ONE of the important results emanating from the epidemiological investigation of tuberculosis should be a critical study of clinic services, since the diagnostic clinic is a vital part of the tuberculosis program. Three years have elapsed since the beginning of the special study of tuberculosis in the Mulberry district of New York which is being carried on by the Department of Health and the Mulberry Health Center of the Association for Improving the Condition of the Poor, and it is now suitable to examine objectively certain phases of the clinic work.

Health Area 69, the section served by the Mulberry Health Center, lies roughly between Broadway and the east side of the Bowery, extending from East Houston Street on the north to the north side of Canal Street. The chief characteristics of this neighborhood have been described in some detail in two previous publications.<sup>2 3</sup> Briefly stated, the families of the district, mainly of Italian birth or parentage, on the whole have a relatively low economic status and the majority of them are living in a generally unfavorable environment, judged by the degree of crowding and conditions of housing.

The Mulberry Health Center with its staff of seven field nurses under the direction of Miss Clara R. Price, R.N., represents the Department of Health in the field of tuberculosis nursing, and the nurses are responsible for the home visiting to the tuberculous patients and their families in the district. The local tuberculosis clinic of the Department of Health, directed by Dr. A. A. Feller, is

<sup>1</sup> From the Bureau of Tuberculosis of the New York City Department of Health, the Mulberry Health Center, and the Milbank Memorial Fund.

<sup>2</sup> Downes, Jean and Price, Clara R.: Tuberculosis Control in the Mulberry District of New York City. The Milbank Memorial Fund *Quarterly*, October, 1937, xv, No. 4, pp. 319-347.

<sup>3</sup> Burritt, Bailey B.: Social and Economic Problems in the Control of Tuberculosis. The Milbank Memorial Fund *Quarterly*, July, 1938, xvi, No. 3, pp. 287-293.

responsible for providing clinic and x-ray examinations for patients referred by the staff of the Mulberry Health Center.

When the special program was started in January, 1935, the following groups of families were selected for intensive service and study: all families in the district in which there was a known active or arrested case of adult pulmonary tuberculosis were to be included and the new families in which cases in these categories were discovered were to be added during the period of special study; all families in which a death from tuberculosis had occurred during the period 1928-1934, but in which there were no known active cases January 1, 1935, were to be followed.<sup>4</sup> All families in which there was evidence of primary infection in a child but no known active cases of adult pulmonary tuberculosis were to be carried and an effort was to be made to locate the source of infection. Families related by blood or marriage to any of the above classes of tuberculous families were to be investigated for case-finding to ascertain whether or not there had been spread of tuberculosis from one family to another. In addition, families in which there were individuals judged by the nurses as suspects were to be investigated.

The material presented in this paper is for the most part an analysis and evaluation of the clinic work during one year, 1937, among individuals in the families subject to special study. As a background for forming a judgment of the clinic work during this particular year, it is proper to describe in some detail certain characteristics of each of the groups of families served by the clinic, such as, the extent to which family contacts have been examined and the prevalence of tuberculosis in the families.

#### DESCRIPTION OF THE FAMILIES SERVED BY THE CLINIC

*Examination of Family Contacts.* During 1937 clinic service was given in 856 families in the Mulberry district; 309 of these families

<sup>4</sup> The families in which a death had occurred during the period 1928-1934, but in which there were no known active cases January 1, 1935, in most instances were families which had been supervised by the Department of Health, and the group is not limited to cases known of only after a death from tuberculosis had occurred.

have been given intensive service since January 1, 1935. The remaining 547 families have had service over a shorter period of time since they have been added to the special study at some time during the three years, 1935-1937. Table 1 shows the proportion of persons in the 856 families which have had an examination for tuberculosis. The families are classified according to the type of index case in the family which indicates the initial reason the family was carried for intensive supervision and study. From 47 to 75 per cent of all persons in the 856 families had an examination by the end of 1937. The highest examination rates have been obtained in the families presenting the more important tuberculosis problems, namely, in each of the three groups where the index case was a pulmonary death, an active case of adult pulmonary tuberculosis, and an arrested case of adult pulmonary tuberculosis. The examination rates in these groups of families were, respectively, 62, 74, and 75 per 100 individuals. From 82 to 85 per cent of individuals under 20 years of age in these families had an examination and somewhat smaller proportions of those 20 years and older were examined.

An important point illustrated by Table 1 is the fact that in all of these families supervised by the Mulberry Health Center and the tuberculosis clinic of the Department of Health, a sufficient number of persons have been examined to furnish fairly reliable data concerning the amount of tuberculosis in the different family groups. Thus, these data may be used in judging the relative importance of close supervision in the various types of families.

*Prevalence of Tuberculous Lesions and Infection in the 856 Families During 1937.* The need for periodic re-examination and case-finding in the various groups of families may best be illustrated by showing the prevalence of tuberculosis among the family members. Table 2 shows the diagnosed cases present in the various family groups during 1937. In this table the families in which the index case was one of active pulmonary tuberculosis, and those where the index case was a pulmonary death, have been combined

AGE GROUP	TOTAL POPULATION	TOTAL EXAMINED	PER CENT EXAMINED
51 FAMILIES—INDEX CASE—ACTIVE PULMONARY TUBERCULOSIS 1935-1937			
ALL AGES	236	175	74.2
0-19 Years	88	75	85.2
20 and Over	148	100	67.6
47 FAMILIES—INDEX CASE—DEATH FROM PULMONARY TUBERCULOSIS			
ALL AGES	217	134	61.8
0-19 Years	87	73	83.9
20 and Over	130	61	46.9
46 FAMILIES—INDEX CASE—ARRESTED CASE OF PULMONARY TUBERCULOSIS			
ALL AGES	255	192	75.3
0-19 Years	123	101	82.1
20 and Over	132	91	68.9
517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD			
ALL AGES	3,205	1,813	56.6
0-19 Years	1,840	1,417	77.0
20 and Over	1,365	396	29.0
21 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS			
ALL AGES	148	73	49.3
0-19 Years	78	50	64.1
20 and Over	70	23	32.9
107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY			
ALL AGES	481	225	46.7
0-19 Years	207	130	62.8
20 and Over	274	95	34.7
67 FAMILIES—INDEX CASE—SUSPECT TUBERCULOSIS <sup>1</sup>			
ALL AGES	337	173	51.3
0-19 Years	158	96	60.8
20 and Over	179	77	43.0

<sup>1</sup> Individual with recent attack of acute respiratory disease.

Table 2. Per cent of persons examined in 856 families classified according to type of index case in the family, Mulberry Health Center district, New York.



AGE GROUP	TOTAL POPULATION	TOTAL EXAMINED	DIAGNOSED CASES OF TUBERCULOSIS					
			RATE PER 100			NUMBER OF CASES		
			ACTIVE ADULT PULMONARY TUBERCULOSIS	ARRESTED ADULT PULMONARY TUBERCULOSIS	ACTIVE NON-PULMONARY TUBERCULOSIS	ACTIVE ADULT PULMONARY TUBERCULOSIS	ARRESTED ADULT PULMONARY TUBERCULOSIS	ACTIVE NON-PULMONARY TUBERCULOSIS
98 FAMILIES—INDEX CASE—ACTIVE CASE OR DEATH FROM PULMONARY TUBERCULOSIS								
ALL AGES	453	309	9.4	6.1	0.6	29	19	2
0-9	51	42	0	0	2.4	0	0	1
10-19	124	106	6.6	3.8	0	7	4	0
20-29	114	68	17.6	8.8	0	12	6	0
30-39	41	25	20.0	7.3	0	5	3	0
40-49	43	27	11.1	3.7	0	3	1	0
50+	80	41	4.9	12.2	2.4	2	5	1
46 FAMILIES—INDEX CASE—ARRESTED PULMONARY TUBERCULOSIS								
ALL AGES	255	192	1.6	20.3	0.5	3	39	1
0-9	35	27	0	0	0	0	0	0
10-19	88	74	0	2.7	1.4	0	2	1
20-29	50	31	6.4	29.0	0	2	9	0
30-39	23	19	5.3	42.1	0	1	8	0
40-49	34	26	0	42.3	0	0	11	0
50+	25	15	0	60.0	0	0	9	0
517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD								
ALL AGES	3,205	1,813	0.2	0.9	0	4	16	0
0-9	652	508	0	0	0	0	0	0
10-19	1,188	909	0.1	0.2	0	1	2	0
20-29	388	89	0	2.1	0	0	2	0
30-39	322	120	0.8	3.3	0	1	4	0
40-49	434	136	0	4.4	0	0	6	0
50+	221	51	3.9	3.9	0	2	2	0
107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY								
ALL AGES	481	225	1.3	0.9	0	3	2	0
0-9	110	62	0	0	0	0	0	0
10-19	97	68	1.5	0	0	1	0	0
20-29	134	55	0	0	0	0	0	0
30-39	58	16	6.2	6.2	0	1	1	0
40-49	36	13	7.7	7.7	0	1	1	0
50+	46	11	0	0	0	0	0	0
88 FAMILIES—INDEX CASE—HEALED NONPULMONARY OR SUSPECT TUBERCULOSIS								
ALL AGES	485	246	0.4	1.2	0	1	3	0
0-9	98	63	0	0	0	0	0	0
10-19	138	83	0	0	0	0	0	0
20-29	93	27	3.7	0	0	1	0	0
30-39	47	26	0	0	0	0	0	0
40-49	48	19	0	5.3	0	0	1	0
50+	61	28	0	7.1	0	0	2	0

Table 2. Prevalence of adult pulmonary tuberculosis and active nonpulmonary tuberculosis among examined individuals in 856 families in the Mulberry district, New York, 1937. (In all groups of families the index case, if living, is included.)



since the two groups of families may be considered as comparable with respect to the presence of active adult pulmonary tuberculosis (past or present) in them. There was so little evidence of exposure to infection in the families where the index case was either healed nonpulmonary tuberculosis or a death from nonpulmonary tuberculosis and in those classed as suspect because of an individual with a recent attack of acute respiratory disease that these two groups of families have also been combined into one group.

The highest prevalence of active adult pulmonary tuberculosis, 9.4 per 100 individuals examined, was noted in the ninety-eight families supervised because of active tuberculosis, either present or in the past, in the family. There the rate of prevalence of active disease was slightly more than forty times as high as the lowest rate, 0.2 per 100, observed in the 517 families where the index case was a child with primary infection. Three active cases were present during 1937 among members of the forty-six families selected for supervision because of a case of arrested pulmonary tuberculosis. Two of these were reactivated index cases formerly classed as arrested; the other was a secondary case in the family. The rate of prevalence of active disease among individuals in these families, 1.6 per 100, was similar to the rate, 1.3, noted in families where the index case was a blood relative of a tuberculous individual. In these two groups of families the rates were from six to eight times the lowest rate, 0.2 per 100, observed in the 517 families where the index case was a child with primary infection.<sup>5</sup>

The prevalence of apparently healed or arrested pulmonary tuberculosis was much higher in families supervised because of active adult pulmonary tuberculosis, and in those supervised because of arrested tuberculosis, than in any of the other groups of families where the rates of prevalence for the most part were approximately

<sup>5</sup> Accurate data on prevalence of tuberculosis can be obtained only through examination of all members of the family. It is believed that the prevalence rates shown here and based upon the examined population are indicative of the differences in the amount of tuberculosis present in the various groups of families.

1 per 100 individuals examined.<sup>6</sup> Active cases of nonpulmonary tuberculosis were present only in families selected for supervision because of a case of adult pulmonary tuberculosis.

The prevalence of tuberculous infection and of lesions of primary infection among individuals under 20 years of age who were examined in the various groups of families throw further light upon the need for intensive service. Table 3 shows the proportion of individuals by age that was positive to the tuberculin test.<sup>7</sup> The highest rate of infection, 68.0 per 100, was found among individuals in the ninety-eight families supervised because of a present active case or history of an active case of adult pulmonary tuberculosis. In the other groups of families the rates varied from 26 to 54 per 100 individuals tested.

In general, the rate of lesions of primary infection among individuals under 20 years of age showed a variation among the groups of families similar to that noted for tuberculous infection.<sup>8</sup> As shown in Table 4, the highest rate, 21.6 per 100 individuals examined, was noted in the ninety-eight families where the infection rate was highest.<sup>9</sup> Conversely, the lowest rates of lesions of primary infection prevailed in the groups of families where the rate of infection was lowest, namely, in the eighty-eight families where the index case was one of healed nonpulmonary tuberculosis or suspect

<sup>6</sup> The relatively high prevalence of arrested adult pulmonary tuberculosis in the 46 families—index case—arrested pulmonary tuberculosis is due to the fact that the families were selected on the basis of the presence of such lesions in some member of the family.

<sup>7</sup> The intracutaneous test with 0.1 mgm. of Old Tuberculin was usually the first test given. If the result of the first test was negative, the dosage was gradually increased. The maximum amount of Old Tuberculin given was 1.0 mgm. The tuberculin used in the clinic was Old Tuberculin (human) prepared and standardized on guinea pigs by the Laboratories of the New York City Department of Health.

<sup>8</sup> All of the cases with a positive reaction to tuberculin and a chest x-ray have been carefully reviewed and checked by Dr. A. A. Feller in order to insure comparable readings of the x-rays and a reliable diagnosis.

<sup>9</sup> The rate of lesions of primary infection in the 98 families may be compared with the rate noted by Opie *et al* among individuals at the same ages in approximately 500 tuberculous families in Philadelphia. There the rate was 30.1 per 100 some ten years ago contrasted with the rate of 21.6 per 100 in the Mulberry families at the present time. See McPhedran, F. Maurice and Opie, Eugene L.: The Spread of Tuberculosis in Families. *The American Journal of Hygiene*, November, 1935, xxii, No. 3, pp. 565-643.

AGE GROUP	TOTAL TUBERCULIN TESTED	TOTAL POSITIVE	PER CENT POSITIVE
98 FAMILIES—INDEX CASE—ACTIVE CASE OR DEATH FROM PULMONARY TUBERCULOSIS			
0-19	122	83	68.0
0-4	5	3	60.0
5-9	35	21	60.0
10-14	45	31	68.9
15-19	37	28	75.7
46 FAMILIES—INDEX CASE—ARRESTED PULMONARY TUBERCULOSIS			
0-19	85	41	48.2
0-4	8	2	25.0
5-9	18	7	38.9
10-14	31	15	48.4
15-19	28	17	60.7
517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD			
0-19	1,400	762	54.4
0-4	92	23	25.0
5-9	430	174	40.4
10-14	599	357	59.6
15-19	279	208	74.6
107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY			
0-19	134	35	26.1
0-4	24	5	20.8
5-9	48	8	16.6
10-14	48	16	33.3
15-19	14	6	42.9
88 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS OR SUSPECT TUBERCULOSIS			
0-19	163	43	26.4
0-4	19	0	0
5-9	56	12	21.4
10-14	60	15	25.0
15-19	28	16	57.1

Table 3. Proportion of individuals positive to tuberculin by age in 856 families in the Mulberry district, New York.

AGE GROUP	TOTAL POPULATION	TOTAL EXAMINED <sup>1</sup>	DIAGNOSED PRIMARY INFECTION FROM CHEST X-RAY	RATE PER 100 PERSONS
98 FAMILIES—INDEX CASE—ACTIVE CASE OR DEATH FROM PULMONARY TUBERCULOSIS				
0-19	175	148	32	21.6
0-4	15	7	0	0
5-9	36	35	9	25.7
10-19	124	106	23	21.7
46 FAMILIES—INDEX CASE—ARRESTED PULMONARY TUBERCULOSIS				
0-19	123	101	14	14.0
0-4	10	7	0	0
5-9	25	20	3	15.0
10-19	88	74	11	14.9
517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD				
0-19	1,840	1,417	223	15.7
0-4	185	101	7	6.9
5-9	467	407	58	14.2
10-19	1,188	909	158	17.4
107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY				
0-19	207	130	8	6.1
0-4	57	22	0	0
5-9	53	40	1	2.5
10-19	97	68	7	10.3
88 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS OR SUSPECT TUBERCULOSIS				
0-19	236	146	8	5.4
0-4	37	20	0	0
5-9	61	43	2	4.6
10-19	138	83	6	7.2

<sup>1</sup> Examined population includes: individuals negative to 1.0 mgm. of Old Tuberculin; among positive reactors only those x-rayed are included; among persons not tested, only those x-rayed are included.

Table 4. Prevalence of lesions of primary infection among individuals under 20 years of age in 856 families in the Mulberry district, New York.

tuberculosis, and in the 107 families where the index case was a blood relative of a tuberculous family.

If the main objective of anti-tuberculosis work is the prevention of the spread of infection, it is clearly evident from the data presented in Tables 2, 3, and 4 that the problem of control among the Mulberry families is centered in the ninety-eight families where the prevalence of active adult pulmonary disease is greatest, where, also, the prevalence of infection and lesions of primary tuberculosis is greatest.

#### APPRAISAL OF CLINIC SERVICE

Aside from testing the clinic physician's diagnostic ability there are two bases for study of the work of a tuberculosis clinic: one, the volume of clinic service and its distribution; the other, the quality of clinic service as revealed by the content of that service. In this particular investigation, the volume and quality of certain services have been studied.

*Volume of Clinic Work.* In order to evaluate the volume of clinic service, it is proper to express quantity in three terms: namely, visits to clinic, number of examinations, and number of different individuals examined. These terms may then be related to one another. In 1937, 1,172 members of the 856 families were examined at the tuberculosis clinic. Approximately three-fourths of the group (860 individuals) had had one or more clinic examinations in previous years; the remaining 312 individuals were examined for the first time during 1937. The total, 1,172 individuals had 1,490 clinic examinations, or an average of 1.3 examinations per person.<sup>10</sup> Visits to clinic numbered 2,324, or an average of 1.5 visits per examination.<sup>11</sup>

<sup>10</sup> The clinic examination may include: (1) tuberculin test, (2) physical examination, (3) x-ray, and (4) sputum test. Children under 16 are given the tuberculin test starting with 0.1 mgm. of Old Tuberculin and the dosage is gradually increased to 1.0 mgm. if the successive tests have a negative result. Those whose reaction to the test is positive are x-rayed. Examination of adults includes physical examination of the chest and a chest x-ray and sputum examination if sputum is available.

<sup>11</sup> A careful distinction should be made between a clinic visit and an examination. An  
(Continued on page 348)

It is of considerable interest to compare the various groups of families supervised by the clinic with respect to the distribution among them of the volume of clinic service. A discussion of the volume of clinic work, however, needs to be prefaced by a description of the examinations made in 1937 with respect to the extent to which they were classed as re-examinations of persons previously examined or were classed as first examinations. Table 5 shows these data for each group of families. It is clearly evident that for the most part the examinations made in 1937 were of persons previously examined in the tuberculosis clinic. The proportion of re-examinations was lowest, 69 per cent, in the eighty-eight families supervised because of a case of suspect tuberculosis or a case of healed nonpulmonary tuberculosis, and was highest, 94.2 per cent, in the forty-six families in which the index case was one of arrested pulmonary tuberculosis. In each of the groups of families there was a higher proportion of first examinations among adults 20 years of age and over than among individuals under 20 years of age. This is a gratifying result since emphasis has been placed upon securing an examination of all young adults over 20 years of age.

The most striking fact brought out by Table 5 is that in every group of families the clinic examinations in 1937 were largely re-examinations of persons previously examined. This indicates a high degree of attainment in clinic supervision for the families where the need for close public health supervision was great and for those selected for special study and observation, even though the need was not great, such as families where the index case was primary infection in a child. However, it is most difficult to see any justification even for purposes of case-finding in continuing the re-examinations, year after year, of persons in the families where the index case was an individual with a recent attack of acute respiratory

examination may include a number of clinic visits; for example, a visit for a tuberculin test, a visit for the reading of the test, and an x-ray if the result is positive. The total visits to clinic also includes those classified as "miscellaneous" and which do not involve an examination, such as a conference with the physician concerning hospital care.

AGE GROUP	TOTAL CLINIC EXAMINATIONS IN 1937	PER CENT	
		Re-examination	First Examination
	98 FAMILIES—INDEX CASE—ACTIVE CASES OR DEATH FROM PULMONARY TUBERCULOSIS		
ALL AGES	237	84.0	16.0
0-19	128	85.9	14.1
20 and Over	109	81.6	18.4
	46 FAMILIES—INDEX CASE—ARRESTED PULMONARY TUBERCULOSIS		
ALL AGES	155	94.2	5.8
0-19	92	96.7	3.3
20 and Over	63	90.5	9.5
	517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD		
ALL AGES	823	75.7	24.3
0-19	635	79.4	20.6
20 and Over	188	63.3	36.7
	107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY		
ALL AGES	121	82.6	17.4
0-19	66	84.8	15.2
20 and Over	55	80.0	20.0
	88 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS OR SUSPECT TUBERCULOSIS		
ALL AGES	145	69.6	30.4
0-19	90	71.1	28.9
20 and Over	55	67.3	32.7

Table 5. Clinic examinations, first examinations, and re-examinations, among individuals in 856 families in the Mulberry district, New York.

disease or even in many instances in the families where the index case was a blood relative of a tuberculous individual, since the rate of tuberculous infection was found to be exceedingly low in both

groups of families. Certain individuals and families may be selected from these groups for continued supervision, but study and observation of the prevalence of tuberculosis have demonstrated that close clinic supervision for many of these families is inappropriate.

The extent to which individuals are being re-examined in the clinic may be further illustrated by Table 6 which shows for each group of families the proportion of individuals examined more than once during 1937. The proportion examined more than once during the current year was highest in the two groups of families, namely: (1) where the index case was an active case or death from adult pulmonary tuberculosis, and (2) where the index case was arrested pulmonary tuberculosis, though the need for re-examination cannot be assumed to be identical for the two groups of families. In these two groups approximately one-third of the individuals considered was examined more than once during 1937 contrasted with from 15 to 23 per cent in this category among the other groups of families. It is of interest to point out also that in most of the groups of families, the proportion of individuals examined more than once during the current year was higher among those under 20 years of age than among adults 20 years of age and older. Again, close supervision as indicated by the proportion of individuals examined more than once during 1937 may be questioned for many of these families. It is difficult to justify a second clinic examination within one year for individuals in families where the tuberculosis problem was not acute.

An inference which may be drawn from Tables 5 and 6 is that when a system of clinic procedure, such as re-examination of clinic cases, is established it tends to operate as a routine regardless of the need. It is obvious that time and money can be saved by less frequent re-examination of individuals who do not need such examinations.

Table 7 shows the number of examinations, clinic visits, and the number of different individuals by broad age groups examined in



AGE GROUP	TOTAL INDIVIDUALS EXAMINED DURING 1937	PER CENT EXAMINED	
		Once During 1937	More Than Once During 1937
	98 FAMILIES—INDEX CASE—ACTIVE CASE OR DEATH FROM PULMONARY TUBERCULOSIS		
ALL AGES	150	66.0	34.0
0-19 Years	76	60.5	39.5
20 and Over	74	71.4	28.4
	46 FAMILIES—INDEX CASE ARRESTED PULMONARY TUBERCULOSIS		
ALL AGES	99	66.7	33.3
0-19 Years	57	63.2	36.8
20 and Over	42	71.4	28.6
	517 FAMILIES—INDEX CASE PRIMARY INFECTION IN A CHILD		
ALL AGES	722	83.0	17.0
0-19 Years	565	82.8	17.2
20 and Over	157	83.4	16.6
	107 FAMILIES—INDEX CASE BLOOD RELATIVE OF TUBERCULOUS FAMILY		
ALL AGES	93	85.0	15.0
0-19 Years	50	82.0	18.0
20 and Over	43	88.4	11.6
	88 FAMILIES—INDEX CASE NONPULMONARY OR SUSPECT TUBERCULOSIS		
ALL AGES	108	76.9	23.1
0-19 Years	70	77.1	22.9
20 and Over	38	76.3	23.7

Table 6. Proportion of individuals having more than one clinic examination in 1937.

the different types of families arranged according to the index case, or the initial reason for supervision of the family. The average

AGE GROUP	TOTAL PERSONS EXAMINED DURING 1937	EXAMINATIONS		VISITS TO CLINIC		
		Number	Number Per Person	Number	Visits Per Examination	
ALL AGES	98 FAMILIES—INDEX CASE—ACTIVE PULMONARY TUBERCULOSIS 1935-1937, OR A DEATH FROM TUBERCULOSIS					
	150	218	1.4	332	1.5	
	0-19 Years	76	114	1.5	184	1.6
	20 and Over	74	104	1.4	148	1.4
ALL AGES	46 FAMILIES—INDEX CASE—ARRESTED CASE OF PULMONARY TUBERCULOSIS					
	99	150	1.5	243	1.6	
	0-19 Years	57	93	1.6	154	1.6
	20 and Over	42	57	1.4	89	1.6
ALL AGES	517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD					
	712	869	1.2	1,331	1.5	
	0-19 Years	565	684	1.2	1,056	1.5
	20 and Over	157	185	1.2	275	1.5
ALL AGES	107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY					
	93	114	1.2	171	1.5	
	0-19 Years	50	61	1.2	94	1.5
	20 and Over	43	53	1.2	77	1.4
ALL AGES	88 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS OR SUSPECT TUBERCULOSIS					
	108	139	1.3	247	1.8	
	0-19 Years	70	89	1.3	169	1.9
	20 and Over	38	50	1.3	78	1.6

Table 7. Clinic examinations and visits to clinic among examined individuals in 856 families, Mulberry Health Center district, New York.

number of examinations per individual in the different groups of families ranged from 1.2 in the families where the index case was

a child with primary infection to 1.5 examinations per individual in families where the index case was arrested pulmonary tuberculosis. In general, the number of examinations per individual examined was somewhat higher in families where the need for re-examinations may be assumed to be greater. There was very little variation among the different groups of families with respect to the average number of visits to clinic per examination. On the average there were from 1.5 to 1.6 visits per examination. An exception was noted in the eighty-eight families (twenty-one families—index case—case or death from nonpulmonary tuberculosis, and sixty-seven families—index case—recent attack of acute respiratory disease) where there was an average of 1.8 visits per examination. The relatively high average number of visits per examination among individuals in this group of families was no doubt due in part to the greater frequency of first examinations among them, since a first examination necessitates at least two visits to the clinic.

The data presented in Tables 5, 6, and 7, bearing upon the volume of clinic work, have clearly indicated that an examination of volume alone, that is, number of individuals examined, number of examinations and number of visits to clinic, will not fully reveal the quality of the clinic work. There is need to know what individuals are being served by the clinic and whether or not the same individuals are being examined year after year. For example, in the ninety-eight families where the index case was an active case or death from adult pulmonary tuberculosis, only one-third of the total members of the families was examined during 1937, and 75 per cent of this number had been examined in previous years.

*Content of the Clinic Examination.* One method of studying the quality of the clinic work is to inquire into the content of the examination itself. Table 8 shows the total individuals by age groups who were examined during 1937 in each group of families classed according to the index case and the proportion which had an examination consisting of certain specified services. For example,

AGE GROUP	TOTAL PERSONS EXAMINED IN 1937	PERCENTAGE DISTRIBUTION OF INDIVIDUALS ACCORDING TO THE CONTENT OF THE EXAMINATION						Column 7 Proportion of Individuals Whose Examination Included an X-ray of Chest
		Column 1 Tuberculin Test Only	Column 2 Tuberculin Test and Physical Examination of Chest	Column 3 Tuberculin Test, Physical Examination of Chest, and X-ray of Chest	Column 4 Tuberculin Test and X-ray of Chest	Column 5 Physical Examination of Chest and X-ray of Chest	Column 6 Only Physical Examination of Chest	
98 FAMILIES—INDEX CASE—ACTIVE PULMONARY TUBERCULOSIS								
ALL AGES	150	2.0	2.0	0.6	3.3	72.0	20.0	75.9
0-19 Years	76	3.9	3.9	1.3	6.6	55.3	28.9	63.2
20 and Over	74	0	0	0	0	89.2	10.8	89.2
46 FAMILIES—INDEX CASE—ARRESTED PULMONARY TUBERCULOSIS								
ALL AGES	99	1.0	7.1	4.0	0	66.7	21.2	70.7
0-19 Years	57	1.8	12.3	7.0	0	52.6	26.3	59.6
20 and Over	42	0	0	0	0	83.7	14.3	85.7
517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD								
ALL AGES	722	13.8	1.1	2.5	5.8	49.9	26.9	58.2
0-19 Years	565	17.7	1.4	3.2	7.4	41.9	28.3	52.5
20 and Over	157	0	0	0	0	78.3	21.6	78.3
107 FAMILIES—INDEX CASE—BLOOD RELATIVES OF TUBERCULOUS FAMILY								
ALL AGES	93	17.2	5.4	1.1	0	51.6	24.7	52.7
0-19 Years	50	32.0	10.0	2.0	0	28.0	28.0	30.0
20 and Over	43	0	0	0	0	79.1	20.9	79.1
88 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS AND SUSPECT TUBERCULOSIS								
ALL AGES	108	21.3	3.7	2.8	8.3	46.3	17.6	57.4
0-19 Years	70	32.9	5.7	4.3	12.9	22.9	21.4	40.1
20 and Over	38					89.5	10.5	89.5

Table 8. Percentage distribution of individuals in 856 families according to the content of the clinic examination in 1937.

an examination of a child might include only the tuberculin test

provided he were negative to 1.0 mgm. of Old Tuberculin, or an examination might include the tuberculin test, physical examination of the chest, and an x-ray of the chest. It is generally agreed that a tuberculosis clinic must include the x-ray as a part of the clinic examination if a high standard of work is to be maintained. Therefore, it is of considerable interest to point out the fact as indicated in Column 7 of Table 8 that from 53 to 76 per cent of the individuals who had a clinic examination in 1937 had an x-ray of the chest. On the other hand, Column 6 shows that far too high a proportion of the examined individuals had only a physical examination of the chest.<sup>12</sup> The proportions in this class in the different groups of families are generally similar and ranged from 18 to 27 per cent of those examined. These proportions were especially high among individuals under 20 years of age. There is nothing in the data to suggest that this type of examination occurs as a chance variation which may have been due to accident or oversight on the part of the clinic physician since such examinations occur in fairly similar proportions in all groups of families considered. An examination of this type may be considered as wasteful of clinic personnel and of the patient's time.

It is the general policy of the tuberculosis clinic to include the sputum test as a part of the clinic examination of every adult. Therefore, it is of interest to know, as indicated in Table 9, the extent to which the sputum test was utilized as a diagnostic aid in examination of individuals over 19 years of age in all groups of families. At these ages the proportion of examinations including the sputum test varied from 10 per 100 examinations in families where the index case was arrested adult pulmonary tuberculosis to 30 per 100 in families where the index case was suspect tuberculosis or healed nonpulmonary tuberculosis. These results are far

<sup>12</sup> It has been a policy of the Bureau of Tuberculosis in all clinics under its supervision to require an x-ray of every person 16 years or older at the time of the first admission; also of every person under that age with a positive tuberculin or obvious respiratory symptoms. Thus, it is assumed that most of those adults, and also the children with positive tuberculin, re-examined in 1937, had been x-rayed prior to that time.

from the standard set by the clinic; however, this no doubt is in part due to the difficulty of securing from every clinic patient a specimen of sputum satisfactory for examination.

*Cost of Clinic Service.*

The special study of tuberculosis has included an appraisal of service on a cost basis. Table 10 shows the total estimated cost of clinic service during 1937 and the cost per examination in the families served by the Health Center and the clinic grouped according to the index case. The average cost per examination in the different groups of families varied from \$1.56 in families where the index case was a blood relative of a tuber-

Table 9. Proportion of examinations among individuals 20 years of age and older which included the sputum test as a part of the examination.

Classification of Families	Total Number of Examinations	Per Cent Including Sputum Test
98 Families—Index Case—Active Case or Death from Pulmonary Tuberculosis	104	21.0
46 Families—Index Case—Arrested Pulmonary Tuberculosis	57	10.5
517 Families—Index Case—Primary Infection in a Child	185	22.4
107 Families—Index Case—Blood Relative of Tuberculous Family	53	14.3
88 Families—Index Case—Healed Nonpulmonary or Suspect Tuberculosis	50	30.0

culous family to \$1.78 in the eighty-eight families mainly composed of those supervised because of suspect tuberculosis. Generally the average cost per examination was somewhat higher for individuals 20 years of age and older than for those in the younger age group. This was due to the fact that an x-ray of the chest which increases the cost of the examination was included more frequently as a part of the examination of adults than among individuals in the younger age group.

The data shown in Table 10 may be used to estimate the annual costs to the Department of Health if all members of the families where the need for a clinic examination is greatest were examined

Age Group	Estimated Cost of Clinic Service <sup>1</sup>	Cost Per Examination
<b>98 FAMILIES—INDEX CASE—ACTIVE CASE OR DEATH FROM PULMONARY TUBERCULOSIS</b>		
ALL AGES	\$ 354.92	\$1.63
0-19 Years	189.06	1.66
20 and Over	165.86	1.59
<b>46 FAMILIES—INDEX CASE—ARRESTED PULMONARY TUBERCULOSIS</b>		
ALL AGES	251.82	1.68
0-19 Years	154.70	1.66
20 and Over	97.12	1.70
<b>517 FAMILIES—INDEX CASE—PRIMARY INFECTION IN A CHILD</b>		
ALL AGES	1,396.62	1.61
0-19 Years	1,090.70	1.59
20 and Over	305.92	1.65
<b>107 FAMILIES—INDEX CASE—BLOOD RELATIVE OF TUBERCULOUS FAMILY</b>		
ALL AGES	178.28	1.56
0-19 Years	91.96	1.51
20 and Over	86.32	1.63
<b>88 FAMILIES—INDEX CASE—HEALED NONPULMONARY TUBERCULOSIS OR SUSPECT TUBERCULOSIS</b>		
ALL AGES	247.30	1.78
0-19 Years	147.92	1.66
20 and Over	99.38	1.99

<sup>1</sup> The cost of clinic service for each group of families is based on the actual number of clinic visits made by individuals in the families in each group and the number of x-rays taken of individuals in each group. The Department of Health estimated the cost of a clinic visit without x-ray as \$.90 and with x-ray as \$1.36.

Table 10. Cost of clinic service for families in the Mulberry district classified according to the index case.

once a year. In the ninety-eight families where the index case was an active case, or death from pulmonary tuberculosis, the estimated cost of examining all members of the family would be \$738.39 per year; and in the forty-six families where the index case was arrested pulmonary tuberculosis the estimated cost would be \$428.40, or a total of \$1,166.79, for both groups of families. Actually \$606.74 (estimated) was spent for examinations in these families during 1937 and the individuals examined included only 35 per cent of the total members of the families.

It is believed that the data presented in this study have clearly indicated the value to the public health administrator of a critical appraisal of the work of the tuberculosis clinic. Consideration of the volume

of clinic work and its distribution among individuals in families in the Mulberry district in relation to the tuberculosis problem in the family has revealed the need for a change in the present distribution of clinic services. Less emphasis should be placed upon the examination of individuals in families where the tuberculosis problem is not acute. Study of the content of the clinic examination has raised the question of the suitability, even in the case of re-examined individuals, of an examination consisting only of the physical examination of the chest.

In conclusion, it is appropriate to emphasize the fact that the epidemiological study of tuberculosis should provide not only accurate knowledge of how the disease acts in its environment, using environment in its broadest sense, but should also serve as a stimulus for the collection of data, such as are presented in this study, which may be used by the public health administrator as a basis for planning more practical and effective procedures for control of the disease.



## THE EFFECT OF HOUSING UPON POPULATION GROWTH

*by* WARREN S. THOMPSON<sup>1</sup>

I PRESUME no one doubts that the housing available reacts upon the growth and the quality of the population, as well as upon individual development in a society in which there is a more or less general belief that a rising standard of living is the normal condition. Housing not only represents one of the major costs of living for most families in urban communities but is also a very influential factor in determining social attitudes in our population. What one has to pay for housing determines to a large extent the amount the family has available to meet other expenses and also the type of community in which the family is reared. The effects of the costs and quality of housing upon social attitudes will be discussed here only as they appear to exert an influence upon the growth of population, and even these will have to be treated very rapidly and perfunctorily. This is necessary both because of our lack of knowledge regarding these effects and the limits of space which can be devoted to a more or less speculative essay.

In the first place, it appears that the costs of housing must have some effect on population growth in large sections of the population. If housing costs absorb an undue proportion of the income, the family is compelled to economize its expenditures in other directions. At any given level of living, housing needs vary almost directly with the size of the family. It is clear, therefore, that one of the easiest ways for a very large section of the population to maintain a given standard of living is to keep the family to the size that can be provided for at the desired level. Hence, it is not surprising that if children and good living quarters become com-

<sup>1</sup> Director, Scripps Foundation for Research in Population Problems. This paper was read in substantially its present form at a meeting sponsored by the American Eugenics Society, April, 1938.

peting choices in family budgets, the choice is frequently in favor of the better living quarters for a small family. I do not mean to imply that housing is the only or even the most important factor competing with children for a fixed or an increasing share in the family income, nor even that the economic aspect of children is the decisive factor in a majority of families, although it well may be, but I do believe that the cost of adequate housing at a desired standard is a factor of importance in determining the number of children that will be reared in many families.

Before going further into this matter it may be well to outline briefly the population prospect so that those interested primarily in housing can better visualize the situation as the populationist sees it. For the most part the discussion will be confined to the situation in the United States, although the experience of other countries will be referred to where it may be of help.

Until quite recently it has been assumed throughout the Western World that a rapidly growing population was the normal and healthy condition of a people. Even yet there are many who can scarcely credit the fact that a great change in population growth has taken place within the last few years and that we do not now have enough births to maintain the existing population when the favorable age make-up, due to a high birth rate in the past, no longer exists. Already we are almost at the end of the period of annual increase in the marriageable population. After 1942 there will be a slight decrease in the annual number of boys and girls passing their twentieth year, which will be much accelerated after 1946. (This is assuming that there will be little or no increase in immigration from abroad). In the normal course of events, therefore, fewer new families will be founded in the decade 1945-1954 than in the decade preceding 1945.

At the same time that the number and the proportion of young people in the population is decreasing, the number and the proportion of old people is increasing. What the net effect of these changes

will be on the demand for housing is difficult to say. But it should be noted that the type of house or apartment which is entirely suitable for an elderly couple or a widow is not suitable for a family with several children, and that, from the standpoint of the growth of population, it is the young couple rearing a family whose needs should be most carefully considered.

Another population fact of prime importance in our discussion is the existence of differential birth rates. The differentials in the United States today are chiefly of two sorts. There is a pretty well established inverse relation between the economic and social status of the family and the number of children: the better the status the fewer the children. The second differential is between country and city. The rural population has a considerably higher birth rate than the city population, and the small cities and villages have a higher birth rate than the larger cities. In 1930 the native white women of the urban population of the United States had only 86 per cent enough children to maintain their numbers at the death rates prevailing at that time. This varied from 76 per cent in the cities of over 100,000 to 104 per cent in the cities of 2,500 to 10,000. In the rural population, on the other hand, the farm population had 69 per cent above replacement needs, that is, 169 per cent on the above basis, and the rural-nonfarm had 37 per cent above replacement needs (137 per cent).

The inverse relation between economic and social status and size of family has been found in practically all studies on this point, of which the writer has knowledge, in the United States. Unskilled laborers have larger families than skilled workers, and skilled workers have more children than professional and business men. Since there is no information available on the incomes for the entire population of any given locality, the economic status of the different groups in a community is probably best measured by the rental (or its equivalent in value of home owned) they pay. In eight large cities for which information regarding the ratio of children under

5 per 1,000 white women 15-44 years of age was available by small areas (census tracts) and for which average monthly rentals were also known, a fairly high inverse correlation was found between the ratio of children and monthly rental—the higher the ratio of children the lower the monthly rental. In three of the cities, however, there was a slight tendency for the child-woman ratio to rise as the monthly rental exceeded \$100.00. However, the numbers involved in this latter calculation are too small to permit of definite conclusions.

Since there is good reason to believe that a large part of those who are on the borderline between hereditary normality and abnormality, as well as most of the hereditarily defective, are to be found in the low rent areas, it seems reasonable to conclude that the groups whose reproduction is of least benefit to the community have larger families on the average than those who are of sound stock. This means that a continuance of present population trends would have as one result the relative increase of the less desirable stocks. But no doubt you are wondering what all this has to do with housing. I am not certain that the connection between these trends and housing is so close that I can convince you of it, but I am certain that a housing program which does not take these trends into account, encouraging those which make for the propagation of sound stock and discouraging those which are harmful biologically, is not deserving of our support.

Dr. Goodsell has pointed out how in Sweden they are convinced that when rents are high it results in couples having to take small quarters and then limiting their families to the number that can be accommodated in these quarters. Thus high rents seem to have a directly depressing effect on population growth in that part of the population which is anxious to maintain or improve its standards. I am not saying that it may not be a good thing, under certain circumstances, to seek to reduce the birth rate below maintenance level and that high rents may not be a perfectly proper agency to

use to depress the birth rate, but I do maintain that we should know the effects of housing costs on the size of the family so that we may not inadvertently allow a housing program to set up a train of consequences as regards population growth which we cannot approve. There can be little doubt that housing which costs so much that a family cannot afford the space it considers proper for its position, if it has several children, will tend to discourage the rearing of more than one or two children, or, indeed, of any children at all. Under present conditions, where many families must live in one or two or three rooms in order to keep their housing expenditures within bounds, it is not surprising that they feel they can afford at most only one or two children.

I am reminded here of an illustrated article in an Italian paper which I saw recently. It showed the Italian's notion of the typical French apartment. This apartment had a large dining room with a table at which ten people could be seated, but there were sleeping quarters for only two persons and almost no living space outside that in the dining room. It was said to represent French mentality on housing and the family. Unfortunately, the trend in urban housing in this country has been in the same direction—very small apartments making little or no provision for children in the apartment itself or in the grounds belonging to it. Relatively few people in the cities have incomes sufficient to enable them to rent apartments or houses adequate to the needs of even moderate-sized families—three and four children. Since modern apartments or houses of a size adequate for three and four child families are beyond the means of most people, many families, as was said above, find themselves in the dilemma of being forced to choose whether they will maintain the standards of housing they consider essential to their position and have but one or two children or will move to poorer quarters in less desirable neighborhoods and have more children. In a community where economic status is highly prized, and is judged to a considerable extent by the housing one uses, it

is inevitable that many, perhaps most, people will choose to maintain their housing status at the expense of curtailing their families.

Now it is perhaps generally the case that the people who have attained some measure of success by diligent effort are good stock—often even of superior stock—and they are just the people who are most likely to be compelled to make the choice between a stationary or even lower standard, both of housing and of living, with more children and a higher standard with few or no children. If this is the case it is clear that a housing situation such as we have today may be a dysgenic factor of considerable importance; it places one more economic penalty on the rearing of children by many couples of sound stock.

In view of the fact that when housing is mentioned today most people think at once of apartment housing in the cities, it may be well to call attention again to the city-village-rural differentials in reproduction mentioned above. Even if housing in cities is greatly improved and cheapened for the moderate-sized family, it is not certain whether this alone will have any very marked effect on the birth rate of the urban population. Certainly the most sanguine person can hardly assume that cheap and satisfactory housing for fair-sized and large families would of itself raise the urban birth rate to the maintenance level. This does not mean that better and cheaper housing for the larger families is not needed, it only means that we should not expect too much from a change in this one factor. Furthermore, we should face the fact that no appreciable improvement in the housing available to fair-sized and large families is to be expected without large government subsidies, either to housing directly or to these families in the form of family allowances. Such families are handicapped by the very nature of our system of compensation for work performance. Only a radical change in our notions of the value of children to the nation is likely to have any effect on our attitudes toward public assistance to these families through reduced rentals or allowances to those which

have enough children to insure the maintenance of our population.

But when we recall the fact that at present the rural population reproduces itself with a substantial gain, the suggestion inevitably arises whether, if it is desirable to maintain our present numbers, it would not be wise to consider housing some of our city workers in rural or semi-rural environments. Some of our studies of ratios of children to women in the areas surrounding cities indicate that the people living on the fringes of certain cities have a significantly larger number of children than those in the cities. This is probably due more to the selection of rural areas in which to live by the parents of the larger families than to the effect of rural environment on the size of these particular families. However, the effect of this environment on the size of the family should not be ignored. Many parents find it easier, both economically and as regards personal effort, to rear children in the country than in the city.

If more thorough investigation into the motives of family limitation should prove that the differential in the birth rates of urban and rural communities is due chiefly to the differences in living conditions, because of their differing densities, then the very maintenance of our population may depend on making rural living conditions available to a larger part of our population. This would certainly mean that much of our present housing program would have to undergo a radical change (assuming that national survival is a worth while end). At present most of our public housing effort is concerned only with providing better living quarters in our large cities. In the future, housing programs may also need to take account of needs for population growth as well as of individual comfort. They may have to consider a variety of social factors which have not entered much into such programs hitherto. As one type of consideration which the populationist thinks important, I would cite the point just made, namely, the possibility that the maintenance of a birth rate high enough to insure even a stationary population may be dependent on providing living quarters in rural



or semi-rural areas for an increasing proportion of our people who now live in highly congested urban areas. Whereas we now have an occasional "Radburn" or "Greenhills" development, we may find it necessary to have many similar projects if we are not to dwindle in numbers more than most of us would consider advisable at the present time.

A second consideration to which many students of the family attach great importance is the psychological effect on the members of the family of living in small crowded quarters. They find that the causes of irritation are multiplied when there is little opportunity for privacy, as is the case in crowded homes. Also, the health of the family is affected when overcrowding is prevalent. Furthermore, in so far as the cost of adequate housing is a reason for limiting the family to one or two children, it may be said that unsatisfactory housing is one cause of the unhappy and abnormal relations which psychiatrists often find in these small families. Indeed many psychologists do not hesitate to assert that the single child in particular is more likely to suffer from mental maladjustments, due both to the parents and to the environment generally, than the child in families having three or more children. This is merely to assert that the family of several children has always been the normal social unit for the rearing of children and that any considerable departure from this norm is likely to issue in some unusual development which will handicap the child in making its way in life. Just how true this is we shall not know until we have far more information on the subject than we now have. The point I would make here is that costly and unsatisfactory housing may have important effects, not only on individual development but also on the size of the family and the social attitudes which grow out of family life.

The populationist is also interested in knowing whether the housing units now being constructed are properly adjusted to the size of the families actually being reared in the country today. This



point can be made concrete in the following way. In 1929-1931, in the birth registration area (excluding Maine, Massachusetts, and California), 29.9 per cent of the native white women living through the childbearing age would have had no children if the birth rates, marriage rates, and death rates of that period were to have continued for a generation; 17.5 per cent would have had one child; 17.6 per cent would have had two children; 11.3 per cent would have had three children; 7.2 per cent would have had four; 4.7 per cent five; and 11.8 per cent six or more. Are housing units being planned and built in somewhat similar proportions? It must be recognized, of course, that the number of children a woman bears does not invariably determine the needs of that particular family for housing, but there is unquestionably a high degree of correlation between these two factors. If it should turn out that the needs for different types of housing units, as indicated by the proportion of families having different numbers of children, are not being met, it can hardly be a matter of indifference from the standpoint of the maintenance or growth of the nation's population. With the proportions of families as given above and the continuance of 1929-1931 death rates, the population as a whole was just slightly more than reproducing itself. It would take but very little discouragement of births in the families of three and over to reduce the birth rate below the maintenance level, and this level had been passed by 1935-1937. I do not mean to imply that housing is the only important factor in discouraging fair-sized and large families, but I wonder whether there is not too large a proportion of one, two, and three-room apartments among the housing units being constructed now in our cities.

These figures showing the proportions of women living through the childbearing period who would bear different numbers of children are interesting in several ways. There were practically six times as many women who would not bear any children as there were who would bear five children. Thus if all but one-fifth of these

sterile women had had one child they would have had somewhat more children than the 4.7 per cent who would bear five children. One more child in the one child families would have added four-fifths as many children to the population as all the women with six children (3.4 per cent), and one more in the two child families would have added somewhat more to our numbers than all the women with seven children (2.3 per cent).

I want to say in conclusion that I do not see how we can have a socially sound housing program which is not based on the qualitative and quantitative population needs of the nation. This probably cannot be done without an increasing measure of public participation in housing, for there appears to be no way in which private enterprise can be induced to provide the housing units suited to a sound population of optimum size.

## BIRTH RATES AMONG RURAL MIGRANTS IN CITIES<sup>1</sup>

by CLYDE V. KISER

IN CONTRAST to fairly adequate knowledge of rural-urban differences in fertility is the dearth of even the basic facts concerning birth rates among rural migrants in cities. This situation arises mainly from difficulties in securing adequate data. Pertinent material is not available from official sources and it will probably be a long time before a registration system similar to that in Sweden is adopted in this country. It is, therefore, necessary to depend largely upon field studies for desired materials.

Worthy of investigation are varied aspects of the problem such as the influence of migrant fertility upon reproductive rates of cities and the bearing of rural migration upon the commonly observed occupational differences in urban fertility. A fundamental element of the problem concerns the immediacy and intensity of the depressing effects of urban life upon the birth rates of migrants. Is the lowering of birth rates visited upon migrants themselves or is the full force postponed until the children of migrants mature and marry? If the fertility of migrants is reduced, is it fairly readily curtailed to the levels observed among individuals who were born in cities?

A limited amount of data pertinent to the latter questions was collected during 1930-1933 as part of population field studies conducted, or participated in, by the Fund. The surveys embraced: (1) approximately 3,000 white families enumerated in selected areas of Columbus, Ohio; (2) approximately 4,000 white families enumerated in selected areas of Syracuse, New York;<sup>2</sup> and (3)

<sup>1</sup>From the Milbank Memorial Fund. The author wishes to acknowledge the helpful suggestions of Dr. Frank W. Notestein of Princeton University.

<sup>2</sup> (a) Notestein, F. W. and Kiser, C. V.: Fertility of the Social Classes in the Native White Population of Columbus and Syracuse. *Human Biology*, December, 1934, vi, No. 4, pp. 595-611. In addition to the data described in the above citation, the present Syracuse

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approximately 2,300 Negro families in a selected section of Harlem (New York City).<sup>3</sup>

Since an important purpose of these surveys was to study class differences in fertility, the schedules provided necessary data such as nativity of the husband and wife, occupation of the husband, age of wife, records of separations and previous marriages, and a complete roster of all children born to the union. In addition, information was secured on two items pertinent to the present discussion: (1) the type of community—city, village, rural—in which husbands and wives were born, and (2) the residence history of the couple since marriage.<sup>4</sup>

The above constitute the essential items used for the present attempt to secure suggestive evidence concerning the impact of urban life upon the fertility of rural migrants. Initial tabulations indicated that the most hopeful attack on the problem was that of restricting all comparisons to couples reporting exclusive residence in cities since marriage. The subdivision of this group according to type of native community yielded the city-born, village-born, and rural-born husbands and/or wives, all of whom were married in cities and reported continuous residence therein during the experienced potentially fertile years of married life.<sup>5</sup>

The basic procedure of this report was simply to compare the sample includes families enumerated in the "Health and Depression" survey of that city. For a description of the latter survey, see: (b) Perrott, G. St.J. and Collins, S. D.: Relation of Sickness to Income and Income Change in Ten Surveyed Communities. *Public Health Reports*, United States Public Health Service, May 3, 1935, 50, No. 18, pp. 595-622.

<sup>3</sup> Kiser, C. V.: Fertility of Harlem Negroes. *The Milbank Memorial Fund Quarterly*, July, 1935, xiii, No. 3, pp. 273-285.

<sup>4</sup> Native communities were coded "city" if the population was 10,000 or more at the time of the individual's birth, "village" if under 10,000 population, and "rural" if the individual was born in the open country. For convenient reference to sizes of communities since earliest census, the coders used *Population*, Vol. 1, Fifteenth Census of the United States: 1930. The "city-village-rural" coding of residence history since marriage was based upon size of community during the calendar years involved. In each case the period involved was the experienced potentially fertile years of married life.

<sup>5</sup> The chief reason for the restriction of the data to couples residing in cities since marriage (or throughout the potential childbearing period if the wife was 40 years of age or more at the time of the enumeration) was the relatively small number of family migrants in the samples. The results of the present surveys resembled findings from more general studies

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marital fertility of city-born groups with that observed among rural and village-born groups, holding virtually constant age, social status, and urban residence since marriage. The birth rates based upon total number of children ever born were standardized for age<sup>6</sup> as were the accompanying percentages of childless couples. For the two surveys of white families, the above indices are presented for wives under 45 and for wives of all ages; for the Negro survey, the data were restricted to women under 45 years of age. The samples analyzed were confined to unions in which neither spouse was foreign born or previously married. They were further restricted to marriages in which the husband and wife were living together or had lived together until the wife's forty-fifth birthday. After the above restrictions were made, the numbers of village-born and rural-born individuals were too small for separate analysis, so these groups were combined for comparison with those of urban origin.

The results secured are interesting, but by virtue of the small samples have little more than suggestive value. There is the suggestion, however, that wives who were born in rural or village areas, but spent their experienced fertile years of married life in cities of 10,000 or more population, were no more fertile than wives

of migration in their indication that rural-urban migration is selective insofar as preponderance of young unmarried individuals is concerned. The cityward movement has been, in large measure, that of young adults drifting away from parental ties. It is readily apparent, of course, that migrant couples moving to the city *after the families were completed* should not be included in analyses purporting to indicate the impact of urban life upon fertility. For migrant-nonmigrant fertility comparisons of urban dwellers, the married couples who migrated to cities before the end of the wife's childbearing period could justly have been combined with migrants who married after arrival in cities, if a current annual birth rate had been available for comparisons of fertility. In this study, however, the fertility index is based upon total number of children ever born to the union. For valid comparisons of birth rates among city-born urban dwellers with those among rural or village migrants in cities, the groups were therefore restricted to individuals residing in cities during their experienced exposure to the risk of childbirth.

<sup>6</sup> The standard was that used in previously published studies of fertility in the Columbus, Syracuse, and Harlem samples. For women of all ages, standardization of rates was derived by applying the age distributions of samples of 92,619 native born white married women drawn from the 1910 census. For women under 45 years of age, the same method of standardization was used, based upon the age distribution of 65,070 native born white married women under 45 years of age.

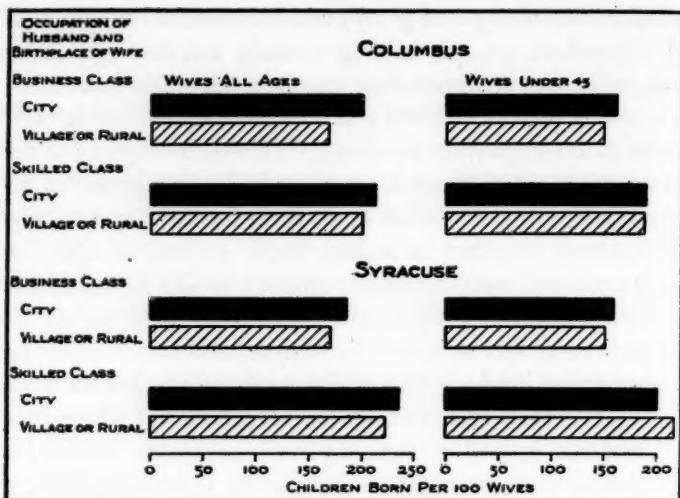


Fig. 1. Standardized birth rates among native white married women enumerated in Columbus and Syracuse and reporting exclusive residence in cities during the potentially fertile period of married life, according to age of wife, occupation of husband, and type of community in which the wife was born. (From Table 1.)

born in cities of that size. As indicated in Figure 1, this situation appeared to exist among native white wives of business men and of skilled workers<sup>7</sup> in Columbus and in Syracuse. It appears to hold true among women of all ages and among women under 45. The small differences actually observed were usually in the direction of higher birth rates among the city-born groups, but the numbers involved do not warrant attaching significance to such differences. Additional classifications based upon the birthplace of husband alone, and birthplace of both husband and wife, are given in Table 1, but these show no substantial deviation from the charted picture.

The proportions of childless couples<sup>8</sup> among city-born and village or rural-born groups are also presented in Table 1 for the classes

<sup>7</sup> The numbers in the professional and unskilled classes were too small for analysis.

<sup>8</sup> That is, those reporting no live birth to the existing union. Couples reporting stillbirths only were classified as childless, but those reporting deceased children only were not

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previously considered. It is evident from Figure 2 that childlessness was as frequent among the canvassed wives who migrated from villages and rural areas as among comparable city-born women. Indeed, the differences observed were more often in the direction of higher rates of childlessness among the migrant groups. Such differences, however, were generally small and not of statistical significance.<sup>9</sup>

Despite the fact that ages of wives were held virtually constant in the foregoing fertility comparisons, it is pertinent to inquire whether the failure of the migrants from villages and rural areas to surpass the city-born groups in fertility levels might be due to possible association of migration with postponement of marriage. This factor, however, did not appear to be of much importance in the present samples.<sup>10</sup> Marriages were a little later among migrant wives than

classified as childless. It should be emphasized that the percentages of childlessness presented above are based in normal part or in entirety upon the experience of women of childbearing age.

<sup>9</sup> Given below are the differences  $\pm \sigma$  of differences between city-born and village or rural-born groups with respect to percentage of childless couples (standardized) among marriages in which the wives were under 45. Except in cases marked (\*), the observed differences were in the direction of higher proportions of childlessness among the groups born in village or rural areas.

	SPOUSE CONSIDERED IN CLASSIFICATION BY BIRTHPLACE		
	Husband	Wife	Husband and Wife
	Diff. $\pm \sigma$ Diff.	Diff. $\pm \sigma$ Diff.	Diff. $\pm \sigma$ Diff.
Columbus, Business	0.8 $\pm$ 4.3*	4.4 $\pm$ 4.2 ✓	4.2 $\pm$ 5.3
Columbus, Skilled	9.0 $\pm$ 4.3 ✓	3.0 $\pm$ 4.3	9.2 $\pm$ 5.6 ✓
Syracuse, Business	1.1 $\pm$ 5.0	2.4 $\pm$ 5.2	4.3 $\pm$ 7.3
Syracuse, Skilled	0.3 $\pm$ 3.9*	6.3 $\pm$ 4.0* ✓	5.2 $\pm$ 5.3*

<sup>10</sup> The median ages at marriage among wives under 45 were as follows:

	Columbus	Syracuse
Business—wives born in cities	22.1	23.2
Business—wives born in village-rural areas	23.1	23.3
Skilled—wives born in cities	20.8	22.2
Skilled—wives born in village-rural areas	21.5	21.3



OCCUPATION OF HUSBAND AND BIRTHPLACE OF HUSBAND AND WIFE	CHILDREN BORN PER 100 WIVES		PER CENT CHILDLESS		NUMBER OF WIVES	
	All Ages	Under 45	All Ages	Under 45	All Ages	Under 45
COLUMBUS						
<i>Business Class</i>						
Birthplace of Husband						
City	192	150	19	23	249	176
Village or Rural Area	185	158	22	22	337	202
Birthplace of Wife						
City	201	162	17	20	260	185
Village or Rural Area	168	149	24	25	334	199
Birthplace of Husband and Wife						
City	206	159	16	19	145	106
Village or Rural Area	166	153	24	23	226	126
<i>Skilled Class</i>						
Birthplace of Husband						
City	216	207	19	17	246	180
Village or Rural Area	194	170	24	26	293	192
Birthplace of Wife						
City	213	192	20	20	268	193
Village or Rural Area	200	189	23	23	276	183
Birthplace of Husband and Wife						
City	218	197	19	19	154	114
Village or Rural Area	191	169	25	28	181	115
SYRACUSE						
<i>Business Class</i>						
Birthplace of Husband						
City	170	151	26	25	363	269
Village or Rural Area	187	166	23	26	157	103
Birthplace of Wife						
City	186	160	25	25	373	285
Village or Rural Area	171	152	24	28	148	94
Birthplace of Husband and Wife						
City	170	151	27	26	282	217
Village or Rural Area	159	134	25	30	70	43
<i>Skilled Class</i>						
Birthplace of Husband						
City	233	203	21	23	494	352
Village or Rural Area	219	214	23	23	242	167
Birthplace of Wife						
City	236	201	22	25	510	371
Village or Rural Area	222	218	21	18	245	159
Birthplace of Husband and Wife						
City	232	193	22	24	378	277
Village or Rural Area	200	200	24	19	124	84

Table 1. Birth rates and proportions childless among native white couples enumerated in Columbus and Syracuse according to type of community in which husbands and wives were born, and by occupational class of husband. All rates were standardized for age and relate exclusively to couples residing in cities since marriage or until the wife reached 40 years of age.



among the urban-born wives in the Columbus business and skilled samples, but no difference was found in the Syracuse business sample, and a slight discrepancy in the reverse direction was found among wives of skilled workers in Syracuse.

Limitations of a different character are more worthy of consideration and should be mentioned here. In the first place, the groups compared are, by definition, based upon place of birth and do not take into account the type of community in which the individuals were reared. In the second place, unfortunately, small numbers prohibited the establishment of pure rural-born groups for comparison with groups restricted exclu-

sively to individuals born in the specific cities surveyed or in cities of equivalent size. Instead, however, it was necessary to combine the village and rural samples, and the city-born group includes individuals born in localities with a lower limit of only 10,000 population.

Whatever the importance of the above limitations may be, it is interesting to find that essentially similar results were secured in the Harlem survey, and the migration of Southern Negroes to Harlem is often pointed to as a prime example of abrupt transition in modes of life. In view of the importance of the northward migra-

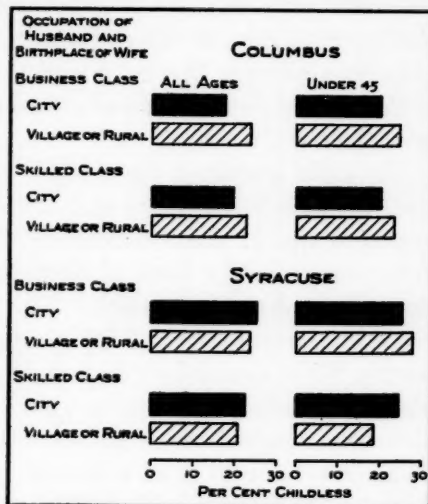


Fig. 2. Proportions childless (standardized) among native white married women enumerated in Columbus and Syracuse and reporting exclusive residence in cities during the potentially fertile period of married life, according to age of wife, occupation of husband, and type of community in which the wife was born. (From Table 1.)

tion of Negroes, coding provided for classification by geographic area, as well as by type of community, of the birthplaces of husbands and wives included in the Harlem investigation. In this instance, too, it should be noticed that all comparisons are limited to wives under 45 years of age who reported continuous residence in *Northern cities* since marriage. Due to the marked concentration of Negroes in the laboring classes, the classifications refer either to "all classes" or to "laborers."

The initial groupings, top of Table 2, present the data on the basis of North-South origins of husbands and/or wives, without regard to type of native community. Practically identical birth rates were found for wives of Northern-born husbands and for wives of Southern-born husbands. This held true for all occupational classes combined and for laboring classes considered separately. When classified on the basis of place of birth of the wife alone, the Southern-born women exhibited rates a little higher than those observed among natives of the North. When "type of community" is used as an additional criterion for classification, however, the higher rate for Southern-born women in this sample of Harlem residents appears to have arisen not from women born in villages or rural areas, but from those born in Southern cities, Figure 3. The birth rates of women born in rural and village areas of the South were practically identical with those exhibited by wives born in Northern cities and lower than those for women born in Southern cities of 10,000 or more population. More adequate data are needed for substantiation or refutation of the tendency observed in this sample for Negro women born in Southern cities to manifest higher birth rates after they arrive in Northern cities than do comparable women of rural or village origin.<sup>11</sup> The point of chief pertinence to the present topic, however, is the suggestion

<sup>11</sup> In this sample, the wives born in Southern cities were characterized by somewhat younger ages at marriage (median 21.1) than those born in Southern villages or rural areas (median 22.4), or in Northern cities (median 22.0). The above mentioned comparison of fertility persisted, however, when years of married life were virtually controlled.

BIRTHPLACE OF HUSBAND AND WIFE	ALL OCCUPATIONS			LABORERS		
	Children Born Per 100 Wives	Per Cent Childless	Number of Wives	Children Born Per 100 Wives	Per Cent Childless	Number of Wives
<i>Birthplace of Husband</i>						
North	80	56	182	84	54	137
South	81	54	450	83	54	389
<i>Birthplace of Wife</i>						
North	76	58	198	80	58	150
South	84	53	434	86	52	376
<i>Birthplace of Husband and Wife</i>						
North	89	57	104	97	55	73
South	86	53	356	87	52	312
<i>Birthplace of Husband</i>						
Northern City	82	56	166	86	54	122
Southern City	88	53	269	90	51	223
Southern Village or Rural Area	75	55	167	78	54	153
<i>Birthplace of Wife</i>						
Northern City	74	58	173	79	57	130
Southern City	94	48	245	93	48	212
Southern Village or Rural Area	71	60	182	75	59	156
<i>Birthplace of Husband and Wife</i>						
Northern City	82	58	88	88	55	60
Southern City	109	45	137	107	45	116
Southern Village or Rural Area	78	54	94	85	53	83

Table 2. Birth rates and proportions childless among native Negro couples enumerated in Harlem according to birthplace of husbands and wives and by occupational class of husbands. All rates were standardized for age and relate exclusively to wives under 45 years of age reporting exclusive residence in Northern cities since marriage.

that Harlem married residents who migrated from the rural South before they were married resembled comparable groups born in the urban North insofar as birth rates are concerned.

The extent of childlessness among the surveyed Negro wives of

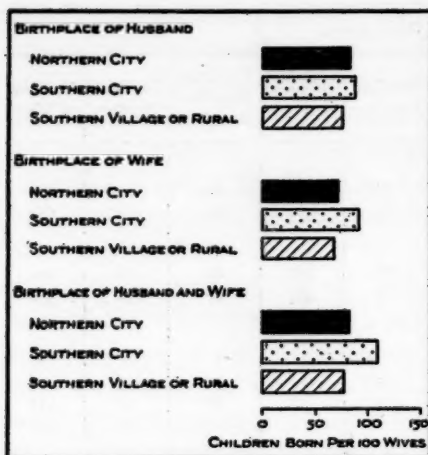


Fig. 3. Standardized birth rates among native Negro wives under 45 years of age enumerated in Harlem and reporting exclusive residence in Northern cities since marriage, according to birthplace of husband and/or wife. (From Table 2.)

child-bearing age is indicated for the various groups in Table 2. Figure 4, relating to part of the data presents the characteristic comparisons. With the exception of a somewhat lower proportion of childlessness among Negro wives born in Southern cities, the observed rates for various groups were not substantially different.<sup>12</sup>

In passing, attention should be called to the generally low birth

<sup>12</sup> Given below are the differences  $\pm \sigma$  of differences between the standardized percentages of childless wives under 45 years of age. Except in cases marked (\*), the differences observed were in the direction of higher percentages of childlessness in the groups mentioned first in the respective pairs.

GROUPS COMPARED	SPOUSE CONSIDERED IN CLASSIFICATION BY BIRTHPLACE		
	Husband	Wife	Husband and Wife
	Diff. $\pm \sigma$ Diff.	Diff. $\pm \sigma$ Diff.	Diff. $\pm \sigma$ Diff.
<i>All Occupations</i>			
North-South	1.6 $\pm$ 4.4	4.9 $\pm$ 4.3 ✓	4.0 $\pm$ 5.6
Northern City-Southern City	3.1 $\pm$ 4.9	9.6 $\pm$ 5.0 ✓	13.6 $\pm$ 6.8 ✓
Northern City-Southern Village/Rural	1.1 $\pm$ 5.5	2.2 $\pm$ 5.2*	3.7 $\pm$ 7.4
Southern Village/Rural-Southern City	2.0 $\pm$ 4.9	11.8 $\pm$ 4.9 ✓	9.9 $\pm$ 6.7 ✓
<i>Laborers</i>			
North-South	0.7 $\pm$ 5.0	5.7 $\pm$ 4.8 ✓	2.6 $\pm$ 6.5
Northern City-Southern City	2.4 $\pm$ 5.6	8.8 $\pm$ 5.6 ✓	10.6 $\pm$ 7.9 ✓
Northern City-Southern Village/Rural	0.2 $\pm$ 6.1	2.1 $\pm$ 5.9*	2.8 $\pm$ 8.5
Southern Village/Rural-Southern City	2.2 $\pm$ 5.2	10.9 $\pm$ 5.3 ✓	7.8 $\pm$ 7.2 ✓

rates and high proportion of childlessness in Harlem as compared with corresponding indices among white women under 45 in Columbus and Syracuse. Identical age standards and scales for plotting were used for whites and Negroes; so the Harlem birth rates in Figure 3 are comparable with those for white women under 45 (section at right, Figure 1). Similarly, Figures 4 and 2 are comparable. It is seen that birth rates were generally about twice as high among the white women, whereas childless couples were from two to three times more prevalent among the Negroes.<sup>13</sup> Such comparisons, of course, demand certain qualifications. The data for Negroes relate to a highly congested area in New York City and those for whites were derived from differing types of neighborhoods in two cities of considerably smaller size. Also one would expect some diminution in the observed Negro-white differences in birth rates and extent of childlessness if the analyses were not restricted to marital fertility. Both types of limitations were vir-

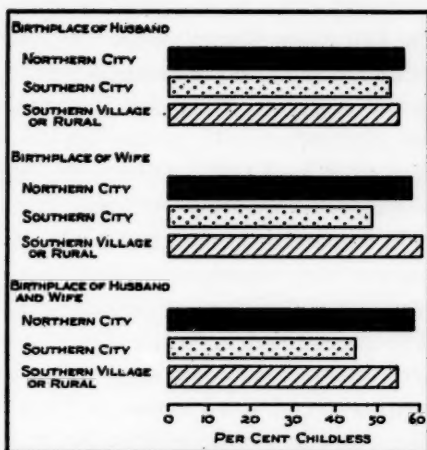


Fig. 4. Proportions childless (standardized) among native Negro wives under 45 years of age enumerated in Harlem and reporting exclusive residence in Northern cities since marriage, according to birthplace of husband and/or wife. (From Table 2.)

<sup>13</sup> From Table 2 it will be seen that approximately 55 per cent of the Harlem wives of childbearing age reported childless marriages at the time of the survey. A side analysis confined to 139 native Negro wives of all classes 40 years of age and over indicated that approximately 44 per cent of such virtually complete families in Harlem were fruitless (confined to marriages which remained unbroken and were spent in Northern cities during the fertile years of married life). Comparable percentages for 228 wives of skilled workers in Columbus and for 305 in Syracuse were 18 and 22, respectively.

tually removed by Notestein's recent analysis of a comprehensive body of previously unpublished 1930 census data pertaining to number of resident children under 10 and number of unbroken marriages of five to nine years' duration in areas of specified size in the East North Central States.<sup>14</sup> In cities of 250,000 population or more, fertility rates (computed from the above data) were about 20 per cent higher among families with native white heads than among comparable Negro families. The families of similar description reporting no child under 10 at home constituted 28.0 per cent among native whites and 52.5 per cent among Negroes.

In commenting upon low birth rates among urban Negroes, students have sometimes attributed the situation to the temporary period of maladjustment incident to the recency of the migration. The present data are not sufficiently adequate to refute this interpretation, but they do suggest that the low birth rates and high proportions of childlessness also characterize Negro wives who were born in Northern cities. A virtually untouched field of research is open to those having the means and the interest to investigate the factors underlying childlessness among urban Negroes.

A few remarks should be made concerning the provisional conclusion that migrants from village and rural areas who marry in cities and reside therein are no more fertile than are comparable individuals who were born in cities. There would appear to be a fairly immediate impact of urban life on the fertility behavior of such migrants, plus any possible selective factors. Possibly the act of migration to cities tends to select individuals without important interests in large families. If such a selection is present, it might at first appear to vitiate the comparisons made. Nevertheless, as previously stated, young unmarried adults constitute the important segment of migrants to cities, so it is with this group that studies of birth rates among rural migrants in cities should be concerned.

<sup>14</sup> Notestein, F. W.: Differential Fertility in the East North Central States. *The Milbank Memorial Fund Quarterly*, April, 1938, xvi, No. 2, pp. 173-191.

The objection may be made that in former decades the foreign inhabitants of our cities were conspicuously fertile and that these immigrants, generally, landed in our large cities before they were married. First of all, however, it should be remembered that much of the apparent native-foreign contrasts in urban fertility was probably associated with differences in economic status. A further explanation, admittedly speculative, is that segregation into Ghettos possibly retarded the infiltration of native urban ways of life. The native youngsters who drift from rural areas to our cities are not so effectually barred from primary contacts with city-born individuals. Negroes, it is true, are virtually segregated from whites in the cities, but the relevant point is that rural-born Negroes are not segregated from the city-born Negroes.

In conclusion, it should be emphasized that the small numbers available in this investigation preclude more than tentative conclusions. From family survey data secured for native white marriages in Syracuse and Columbus and for Negroes in Harlem, the points of chief significance appear to be as follows:

1. The urban marital fertility among native white individuals who moved from villages and rural areas to cities before marriage was not higher than that observed among city-born individuals of comparable age and social status.
2. The marital fertility within Northern cities was about the same for Negroes who migrated from Southern villages and rural areas as for Negroes of comparable age and social status who were born in the urban North.
3. The data do not support the hypothesis, sometimes stated, that the extremely low birth rates and high proportions of childlessness among urban Negro marriages arise from difficulties of adjustment inherent in the recency of Negro migration. Birth rates were as low, and percentages of childlessness as high, among Negroes born in Northern cities as among those born in Southern villages and rural areas.



# EVALUATION OF A RURAL SCHOOL HEALTH EDUCATION PROJECT

## III. A STUDY OF PUPIL HEALTH PRACTICES

by RUTH E. GROUT AND E. GENEVIEVE PICKUP<sup>1</sup>

THE health practices of a school child are determined by the many factors which influence the development of the child's total personality. It is difficult, if not impossible, to isolate any one of the many influences such as the home, school, and community, and adequately measure the extent of its effects on the child. Each has a part in his total growth and all are closely inter-related.

An attempt has been made recently in Cattaraugus County to study pupil health practices, and as far as possible to relate them to the influences of the school. The complexity of the problem as suggested above has been recognized. An experimental program of school health education has been in progress in the small rural schools of Cattaraugus County since the Fall of 1931. It was felt that studies which might define pupil health behavior more clearly and which might indicate the extent to which behavior had changed over a period of time would be of help in evaluating the effectiveness of this program and in pointing the direction it should take in the future.

The studies were conducted in the small one and two-teacher schools. Some were made in the Fall of 1932, near the beginning of the experimental program. The same studies were made again during the Fall of 1936 after the project had been developing for four years. Others were carried on in the Spring of 1937 and of 1938. Some of the studies also were made in a control group of schools

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Appreciation is extended to the district superintendents of Cattaraugus, Steuben, and Allegany counties for their assistance in these studies, and to Bessie Lee Gambrill, Associate Professor of Elementary Education, Yale University, for her helpful criticism of the manuscript.



in three supervisory districts of Steuben and Allegany counties. These schools were closely comparable to the Cattaraugus County schools<sup>2</sup> except that they have not received the benefits of an organized school health program such as has been developed in Cattaraugus County.

The study of pupil health practices was approached from several points of view, and employed the methods of pupil questionnaires, parent questionnaires, and observation. There was much difficulty experienced in obtaining objective evidence on health practices. Studies by trained observers of the daily living of large groups of children, both at school and at home, were impractical. Such studies were made to a limited extent in relation to classroom living, but it was necessary to depend largely upon reports of pupils and parents for information on health practices at home.

Lack of personnel also made it necessary for the teachers to administer the pupil questionnaires and the public health nurses the parent questionnaires. Although careful instructions were given in each case, uniformity was difficult to obtain.

Many types of records were unsatisfactory. Teachers' records on individual pupil health behavior could not be used. As valuable as these records may be for guiding work with individual pupils, such records usually are too subjective or complex for objective study. Records of health examination findings, defect corrections, absences, and communicable diseases are sometimes used as indices of the effectiveness of a school program but are unsuited as evidences of the effects of the program on pupil health behavior.

The methods that were employed are entirely exploratory. Some were modified from similar studies carried on elsewhere while others were originated for the purpose. The complete study has been designed to give composite pictures of pupil health practices,

<sup>2</sup> A comparison between the experimental and control groups will be found in—Strang, R. M.; Grout, R. E.; and Wiehl, D. G.: *Evaluation of a Rural School Health Education Project. I. Evaluation of Teacher's Work in Health Education*. Milbank Memorial Fund *Quarterly*, October, 1937, xv, No. 4, pp. 355-370.

and the influences of the school, rather than a detailed study of any individual children or school situations. Ideally, both types of studies are needed for a satisfactory understanding of the whole problem. The teacher's appraisal of an individual child's development is of greater aid to the teacher in making adjustments for the child and helping him to make his own, than a general study such as this. However, it was felt that objective studies which were developed from the standpoint of general County-wide problems also had their place in helping to determine administrative and supervisory policies and procedures.

#### PART I. A STUDY OF PUPIL HEALTH PRACTICES

*A. Based on Pupil Questionnaires.* During the Fall of 1932 a set of questions on daily health practices was given by the teachers in the rural schools of Cattaraugus County to all pupils from grades 1 to 8. The same questions, with one other added, were given again in the same schools in the Fall of 1936. This time they also were given to the pupils of the control group of schools in Steuben and Allegany Counties.

In 1932 returns were received from 145, or 60.7 per cent, of the schools, or from a total of 1,773 pupils. In 1936 there were 175, or 89.2 per cent, of the schools in Cattaraugus County which sent in answers from 2,028 pupils and 82, or 85.1 per cent, of the schools in the control group which returned answers from 719 pupils. The answers from four out of the five supervisory districts of Cattaraugus County will be analyzed in this section. These include answers from a total of 1,509 pupils in 1932 and 1,712 pupils in 1936. In the fifth supervisory district of the County the questions were given during the winter months instead of in the Fall. Since some of the habits vary with seasons of the year, and since the returns from the other four districts were sufficient in number and typical of the County, it seemed best to omit the fifth district from the summary.

Written instructions were given the teachers in order that the tests might be administered as uniformly as possible. No names were required, and the teacher or an older pupil, perhaps a brother or sister, helped the youngest pupils record their answers. The answers were tabulated by one person.

Previous experience with the use of these or similar questions has shown the trustworthiness of the pupils' answers. The American Child Health Association which used the questions in its HEALTH SURVEY OF 86 CITIES gives evidence that the questions were answered accurately by the pupils. Shuttleworth in an unpublished report on the use of these and similar questions among village children in Cattaraugus and Steuben Counties showed that the answers were trustworthy.<sup>3</sup> Although no studies were made in this case to test the accuracy of the answers, the teachers who often knew the families of their communities quite well felt that truthful answers were given. The fact that the conditions reported are so far from the ideal might be considered another indication of the accuracy of the answers, or at least that the answers do not reveal conditions better than they are.

The questions asked are given below.<sup>4</sup>

<sup>3</sup> Shuttleworth, F. K.: Educational Results of the Cattaraugus Demonstration. Paper prepared at Yale University, 1931.

<sup>4</sup> These questions are adapted from those used by the American Child Health Association in its HEALTH SURVEY OF 86 CITIES, which was published in New York City in 1935.

*"What You Usually Do"*

1. What time did you go to bed last night?
2. What time did you get up this morning?
3. Name each thing you ate for breakfast this morning.
4. What did you eat for lunch this noon? (not given in 1932)
5. What did you eat for supper or dinner last night?
6. How many cups of coffee did you drink yesterday?
7. How many glasses of milk did you drink yesterday?
8. Did you have an all-over bath last week?
9. Did you brush your teeth yesterday?
10. Have you been to a dentist in the last year? (since January last—1932)
11. How many days were you out of school last week because you were sick?
12. Do you sleep in a room all by yourself?
13. Do you usually eat what is put before you at the table?
14. What does your mother usually give you to eat when you come home in the afternoon after school?

(Continued on page 386)

Both in Cattaraugus County and the control group there was a wide variation in the percentage of pupils who reported good health habits of different types. For each item the differences in the proportions shown in the Cattaraugus County figures for 1932 and 1936 and the control group figures for 1936 are small. (See Tables 1 and 2). Seventy-five per cent or more of the pupils in all three groups reported milk drinking, an all-over bath, sleeping with windows open and eating what is put before them, while only from 25 to 35 per cent of the pupils reported visits to the dentist and sleeping alone. The diet rating which was based on an optimum rating of ten was close to five in each case.<sup>5</sup>

Only two items show statistically significant improvement in 1936 over 1932, although the slight changes for other items in this period are all in the direction of improvement in health habits. The significant changes are with reference to "going to the dentist" and the average amount of milk drunk. The percentage of children who reported that they had drunk some milk "yesterday" increased only from 78 to 80, but the average number of glasses drunk increased from 1.9 to 2.5.

The greatest improvement was shown in connection with visits to the dentist. Thirty-four per cent reported visits in 1936 as against 25 per cent in 1932. The rewording of the question in 1936 might account for some of this difference, but not for all. The questions were given during the latter part of the year in 1932, and usually the greatest number of dental corrections are made in the summer. Since farm incomes had not increased appreciably during this time

15. What do you usually do after school in the afternoon until your evening meal? Write down one or more of the following: play outdoors, do outdoor chores, help mother in house, play indoors.

16. Do you sleep with a window open?

<sup>5</sup> This diet rating is an arbitrary rating developed by the Milbank Memorial Fund to aid in the study of the day's diets of school children. According to the rating three or more glasses of milk count 3, two glasses 2, and one glass 1, potatoes count 1, cereal 1, egg or meat 1, and fruit and vegetables 4. Greater values are given to tomatoes and citrus fruits, leafy or green colored vegetables and yellow colored vegetables than to other vegetables and fruits.

and no special funds were available for dental corrections, it is not too much to assume that education played an important part. There is no knowledge of the comparative influence of the nurse working in the homes and the teachers in their classrooms or with parents, but observations would indicate that each had a share.

There are a number of factors which might account for the slight change in most items. In most instances the home is involved in the performance of the habit, and any change would involve a new routine for the home. These changes take place slowly, especially in homes of lower social and economic levels. In an analysis of the coffee drinkers in 1932 it was found that 45 per cent of the drinkers were concentrated in thirty schools which included only 20 per cent of the total number of children who answered the question. The public health nurses were questioned as to possible causes for the large number of coffee drinkers. Typical answers were: "One large family lacks money for milk and has no cow"; "Consists mostly of Polish children"; "Cannot afford milk. Parents very uncooperative and are antagonistic to nurse in her home visits"; "Reason may be traced to lack of early health teaching." In every area there are families such as these among whom improvements in health do not come rapidly, if at all.

The effect of the depression cannot be overlooked as another possible factor toward slow change. A large proportion of the rural children come from farm homes and the years 1932-1936 were especially difficult ones for farm families. Farm incomes reached bottom in 1933, and although they later increased slightly, they still were lower in 1936 than in 1930.<sup>6</sup>

Still another factor which should be taken into consideration is the manner in which the school program developed during the period from 1932-1936. Special attention was given to bettering the school environment and health teaching methods, since it was felt that they were among the fundamentals in improving pupil

<sup>6</sup> Reports from the office of the Cattaraugus County Farm Bureau.

health behavior. Although teachers were helped to study the individual pupils and their problems, and teachers' committees worked on a better organization of the health instruction program, there was no intensive county-wide emphasis during this time on specific health behavior problems such as those included in the questionnaire.

The slight superiority for the Cattaraugus County group in 1936 over the control group for a few items is not great enough to be considered significant. The comparative figures are also given in Table 1. The number of children having some dental care, and the use of milk and coffee are the practices which show the more significant

Table 1. Summary of answers to "What You Usually Do"<sup>1</sup> received from pupils in Cattaraugus County and in a control group.

ITEM	PER CENT OF PUPILS		
	Cattaraugus County		Control Group
	1932	1936	1936
Eleven Hours or More of Sleep	48.7	52.4	49.2
Less Than Eight Hours of Sleep	2.8	2.2	1.3
Sleep Alone	27.8	28.1	29.1
Sleep With Windows Open	76.4	81.3	81.7
Had Coffee Yesterday	28.0	25.6	26.0
Two or More Cups of Coffee	9.8	8.3	18.8
Drank Milk Yesterday	78.4	80.5	76.7
Eat What is Put Before You at the Table	86.7	90.9	88.2
Brushed Teeth Yesterday	72.6	71.5	74.4
Visited Dentist in Last Year	25.2	34.0	27.6
All Over Bath Last Week	84.1	86.6	85.4
Absent Last Week Because of Sickness	7.5	9.5	7.7
What Do You Do After School?			
Play Outdoors	40.9	44.4	36.9
Do Outdoor Chores	29.2	27.4	32.2
Help in House	25.4	22.5	25.4
Play Indoors	4.5	5.7	5.5
Average Diet Ratings			
Two Meals	4.2	4.4	—
Three Meals	—	5.0	4.5
Average Glasses of Milk Drunk	1.9	2.5	2.1

<sup>1</sup> Total number of pupils, Cattaraugus County in 1936: 1,712  
 Total number of pupils, Cattaraugus County in 1932: 1,509  
 Total number of pupils, Control Group in 1936: 719

superiority in Cattaraugus as compared with the control group.

A study of foods eaten and selected health habits according to grade groups, shows some interesting differences in the changes in practices during the four-year period at various grade levels. Table 2 gives the results of a tabulation of selected items for all pupils whose grades were reported. Consistent tendencies for diet and practice to vary with age are shown for the Cattaraugus pupils in 1932 and 1936 and for the control group in 1936. For example, there is a steady increase in the percentage of pupils who drank coffee and in the average cups of coffee drunk from lower to upper grades. The percentage taking baths and brushing teeth also increased. Of special interest, however, is the comparison of pupils at specific grade levels in the two periods. For pupils in grades 5-6 and grades 7-8, some improvement in health practice between 1932 and 1936 is indicated for every item shown in Table 2. On the other hand, differences for the younger children in these two years are extremely slight and not consistently more favorable.

The changes in dietary habits reported by the older children suggest an increasing responsibility and interest on the part of some toward their food. Only one-half as many children in grades 7 and 8 reported eating pancakes for breakfast in 1936 as in 1932, and the per cent reporting cereal for breakfast increased from 52 to 68. The use of coffee was reported by 5 per cent fewer children in 1936, and the per cent who drank two or more glasses of milk increased 4 per cent.

When the Cattaraugus County groups by grades are compared with the control groups in 1936, the slightly more favorable results for some items in Cattaraugus County are found to apply chiefly to the older children.

Comparison of the answers of Cattaraugus County children in grades 5 and 6 in 1936 with answers to the same questions of fifth grade pupils in eighty-six cities in 1924 is given in Table 3.<sup>7</sup> Since

<sup>7</sup> *op. cit.* Footnote 3.



ITEMS	GRADES 1-2	GRADES 3-4	GRADES 5-6	GRADES 7-8
<i>Per Cent Having Fruit for Breakfast</i>				
Cattaraugus County, 1932	10.7	10.2	11.4	18.5
Cattaraugus County, 1936	9.7	10.7	17.9	19.7
Control Group, 1936	—	—	—	—
<i>Per Cent Having Pancakes for Breakfast</i>				
Cattaraugus County, 1932	21.1	20.2	22.1	31.4
Cattaraugus County, 1936	19.4	19.0	15.8	16.3
Control Group, 1936	—	—	—	—
<i>Per Cent Having Cereal for Breakfast</i>				
Cattaraugus County, 1932	54.9	51.2	55.8	52.2
Cattaraugus County, 1936	58.7	58.7	67.0	68.0
Control Group, 1936	—	—	—	—
<i>Per Cent Who Drank Coffee</i>				
Cattaraugus County, 1932	21.4	24.0	28.6	39.3
Cattaraugus County, 1936	23.2	21.2	24.3	34.3
Control Group, 1936	19.7	24.5	23.6	34.8
<i>Average Cups of Coffee Drunk</i>				
Cattaraugus County, 1932	0.28	0.35	0.44	0.70
Cattaraugus County, 1936	0.37	0.39	0.41	0.58
Control Group, 1936	0.27	0.33	0.31	0.55
<i>Per Cent Who Drank Milk</i>				
Cattaraugus County, 1932	82.8	80.6	79.3	78.2
Cattaraugus County, 1936	82.7	76.9	83.3	78.7
Control Group, 1936	81.8	75.5	77.5	71.0
<i>Average Glasses of Milk Drunk</i>				
Cattaraugus County, 1932	2.1	2.3	2.3	2.3
Cattaraugus County, 1936	2.3	2.5	2.7	2.6
Control Group, 1936	1.9	2.1	2.4	2.2
<i>Per Cent Having Two or More Glasses of Milk</i>				
Cattaraugus County, 1932	61.7	68.7	60.9	61.1
Cattaraugus County, 1936	65.4	61.2	68.3	65.3
Control Group, 1936	—	—	—	—
<i>Per Cent Having Bath Last Week</i>				
Cattaraugus County, 1932	82.5	82.5	85.8	88.5
Cattaraugus County, 1936	81.5	87.2	87.6	90.7
Control Group, 1936	80.3	84.0	88.5	84.5
<i>Per Cent Brushing Teeth Yesterday</i>				
Cattaraugus County, 1932	65.3	76.0	74.7	72.9
Cattaraugus County, 1936	70.4	70.5	75.7	80.0
Control Group, 1936	64.4	77.0	76.9	71.0
<i>Per Cent Eating What is Put Before Them</i>				
Cattaraugus County, 1932	88.3	86.4	86.5	86.8
Cattaraugus County, 1936	79.5	88.4	91.1	91.7
Control Group, 1936	—	—	—	—
<i>Average Hours of Sleep (Hours and Minutes)</i>				
Cattaraugus County, 1932	11-2	10-36	9-57	9-54
Cattaraugus County, 1936	11-5	10-35	10-10	9-51
Control Group, 1936	10-59	10-33	10-9	9-53
<i>Number of Pupils in Group</i>				
Cattaraugus County, 1932	308	412	430	303
Cattaraugus County, 1936	341	438	436	300
Control Group, 1936	132	200	182	155

Table 2. Variations in selected health practices by grade groups. Experimental and control groups.



the conditions under which the questions were given for the American Child Health Association's study were different, the results are not exactly comparable with those in Cattaraugus County, but

Table 3. Comparison of answers to "What You Usually Do" received from pupils in grade five in two different studies.

	86 Cities American Child Health Association <sup>1</sup>	Cattaraugus County, 1936 Rural Schools <sup>2</sup>
	Per Cent	Per Cent
Milk Drinking		
No Milk	22	16.8
Two or More Glasses	58	63.2
Coffee Drinking	39	24.3
All Over Bath Last Week	92	83.8
Brushed Teeth Yesterday	68	75.7
Fruit for Breakfast	15	17.9
Cereal for Breakfast	35	67.0
Average Hours of Sleep	10hrs. 11 min.	10hrs. 10 min.

<sup>1</sup> 35,000 pupils, fifth grade, January-June 1924.

<sup>2</sup> 436 pupils, fifth and sixth grades, September-November 1936.

some interesting differences between the groups are apparent. More of these rural children drank milk and fewer drank coffee, and a much higher percentage had a cereal for breakfast. On the other hand, a larger proportion of the urban children had an all-over bath.

#### B. Based on Classroom Observations. In the Fall of 1936 observations were made of the health behavior of children in school situations. Forty schools were visited, 20 in Cattaraugus County and 20 in the control group. The schools were selected at random from lists of teachers who were in their schools for the second year or longer. The teachers had been rated by their district superintendents for their general teaching ability, and a proportionate number was selected from each of the three classifications used. The observations in each school were made by one person and at the same time of day. The hours from 9 to 1 were chosen because they gave a good sampling of the school day and also showed the lunch hour habits of the children. The observer alternated her weeks of observation between the experimental group and the control group of schools to avoid the influence of seasonal changes on either group.

Care was taken to make the observations as inconspicuously as possible. The observer so controlled her visit to each school that neither teacher nor pupils was aware of the true purpose of the

ACTIVITIES	CATTARAUGUS COUNTY 195 PUPILS		CONTROL GROUP 354 PUPILS	
	Number of Children Observed	Per Cent Doing It	Number of Children Observed	Per Cent Doing It
Outside Clothing Is Not Worn in School	185	92.5	238	90.4
Rubbers and Rubber Boots Are Not Worn in School	166	99.4	241	89.3
Hands Are Washed Before Eating	143	88.1	167	35.3
Hands Are Washed After Toilet	51	70.5	79	8.8
Hands Are Washed After Play	178	16.2	229	3.9
Hands Are Washed Under Running Water	141	58.7	142	18.3
Mid-morning Lunch, When Eaten, Consists of Milk or Fruit	57	21.0	64	28.1
Nothing Is Eaten Between Meals	135	92.5	220	72.2
Lunch Is Eaten in a Leisurely Fashion	134	64.1	157	57.3
Standing Posture Good—				
Feet Flat on Floor <sup>1</sup>	62	79.0	38	76.3
Head Up, Chest Out, Abdomen and Chin In <sup>1</sup>	62	74.1	56	44.6
Books Are Held at an Angle for Easier Reading <sup>1</sup>	141	28.3	124	43.5
Material Is Held at a Distance of About 12 Inches from Eyes <sup>1</sup>	150	94.0	196	89.2
Fingers, Pencils, Crayons, etc. Are Kept Out of Mouth <sup>1</sup>				
Early A. M.	135	87.4	221	80.9
Late A. M.	145	64.1	228	77.1
TOTAL	1,885	70.0	2,400	59.8
Average of Result for 15 Items		68.7		54.3

<sup>1</sup> These figures were obtained through timed observations, that is, the number of pupils observed within a three-minute period.

Table 4. Classroom observations made on children's health practices in Cattaraugus County and in a control group.

visit. In the Cattaraugus County schools she dropped in to each school unexpectedly and asked for the privilege of visiting for the morning. In the control group she did likewise, but carried a letter of introduction from the district superintendent. Classroom work proceeded in routine fashion, and many times when penciled checks were necessary they were done symbolically, such as by means of a group of lines to form a design.

The points to be observed were divided into four parts. They covered the teacher and her program, the mental attitudes of the children, the school environment, and the children and their health behavior. The discussion of this section will be limited to observations of pupil health behavior.

Despite the care given to the preparation of the observation sheet it was found that the items on pupil health behavior were often stated in such a way as to make objective observations difficult. A selection has been made of the items in which there was the least opportunity for error.

The summary of the observations on these items is found in Table 4. Other items which have a bearing on pupil health behavior are found in Table 5. It will be seen in Table 4 that fifteen items gave an average score of 70.0 per cent for Cattaraugus County and 59.8 per cent for the control group. Cattaraugus County showed considerable superiority over the control group in handwashing procedures, and eating lunch in a leisurely fashion. Quiet games or rest followed lunch in nine schools in Cattaraugus County and five schools in the control group (not shown in table). The mid-morning lunch appears to be somewhat better in the control group as does also the practice of holding books at an angle for easier reading.

#### PART II. INFLUENCES OF THE SCHOOL ON HEALTH PRACTICES OF CHILDREN

*A. Evidences Revealed Through School Studies.* Many phases of the school program have a part in influencing pupil health practices. Two phases, the teacher's work in health education and the school environment, already have been discussed at length in previous articles. These same two influences were also studied during 1936 through classroom observations in twenty schools in Cattaraugus County and twenty schools in the control group. The manner in which these observations were made is described in some detail in Part I. The observations are summarized in Table 5. Only those items which appear to be significant and for which complete and accurate observations were made have been used in this general summary.

There is a striking failure on the part of the teachers in both groups to provide rest periods for the younger children. Two out

of twenty teachers in Cattaraugus County and none in the control

Table 5. Classroom observations on teacher and program, mental attitudes and school environment, Cattaraugus County and Control Group.

ITEMS	CATTARAUGUS COUNTY 20 SCHOOLS	CONTROL GROUP 20 SCHOOLS
<i>Teacher and Program</i>		
Allows Time for Children to Wash Hands at Noon	16	7
Provides One or More Rest Periods for Lower Grades	2	0
Takes Time to Correct Poor Posture <sup>1</sup>	10	6
Takes Time to Correct Position in which Books Are Held <sup>2</sup>	9	7
Supervises Play Activities at Least Once During the Morning or Noon Recess	7	4
Has Desks Arranged for the Best Light	7	6
Has Seats and Desks Adjusted to Size	9	7
Helps Pupils to Watch the Temperature of the Room Carefully <sup>1</sup>	6	1
Allows Free, Necessary Movement About the Room <sup>1</sup>	17	18
Allows Pupils to Leave the Room when Necessary Without Permission <sup>3</sup>	16	16
<i>Mental Attitudes</i>		
Children Are Free to Use the Materials Around the Room and Do So <sup>3</sup>	17	17
Children Are Courteous	17	15
Children Get Over Grievances and Disappointments Quickly	10	11
Children Appear Happy and Contented as They Work and Play About the Room	20	20
Children Seem to Show No Undue Fear of Teacher	20	16
Teacher Gives Pupils Material They Can Use	19	20
Teacher Gives Pupils Tasks They Can Do	19	20
<i>School Environment</i>		
All Outside Doors That Are Used Are Screened	3	7
The Water Is Kept in a Covered Container	12	13
There Are Paper Cups	16	12
There Are Fountains	4	2
The Children Are Allowed a Fresh Cup Each Time They Drink	6	3
There Are Paper Towels	20	16
The Lunch Boxes Are Kept in a Covered Place	7	0
The Wraps Are Hung Neatly	16	16
Walls Are Painted a Light Shade	14	17
Walls Are Papered a Light Shade	5	2
There Are Double Mounted Shades	16	3
There Are Single Shades	4	17
There Are Inside Toilets	19	9

<sup>1</sup> In Cattaraugus County one school was not observed on this point.

<sup>2</sup> In Cattaraugus County three schools were not observed on this point.

<sup>3</sup> In the control group one school was not observed on this point.

group made such a provision. The teachers in both groups were also slack in supervising play activities at least once during the morning or noon recess. Only seven in Cattaraugus County and four in the control group did this.

The teachers in both groups, with the exception of two in each group, "allowed free, necessary movement about the room." On the whole the children in both groups "appeared happy and contented as they worked and played about the room." Most of them were courteous and showed no undue fear of the teacher.

All of the schools in Cattaraugus County had paper towels while only four lacked them in the control group. In nearly every school of both groups the walls were painted or papered a light shade. There were very few schools with screens in both groups, but four more in the control group than in the other.

There were a number of items on which Cattaraugus County showed some superiority over the control group. These include allowing time for children to wash hands at noon, and the presence of double mounted shades and inside toilets. There were no items in which the control group showed a similar superiority.

*B. Evidences Revealed Through Health Knowledge Tests.* Another approach to the influences of the school is through the use of health knowledge tests. In the Spring of 1937 the Gates-Strang Health Knowledge Tests were given to 131 pupils of grades 3 to 8 in fifteen schools of Cattaraugus County and to 133 pupils of the same grades in fifteen schools of the control group (Steuben and Allegany counties). The schools were selected from among those used in the classroom observation studies during the previous Fall. These tests are of the multiple choice type and consist of three parts. Each part compares closely with the other two. There are sixty questions in each and the questions are very similar. A revised edition of the original test was used in its experimental form and so had not been standardized.

One person administered the tests in all of the schools. In each

GRADE	MEAN SCORE		NUMBER OF PUPILS	
	Cattaraugus County	Control Group	Cattaraugus County	Control Group
3	62	68	17	24
4	90	77	31	30
5	110	100	24	20
6	123	118	26	27
7	135	118	24	23
8	138	127	9	9
TOTAL	108	98	131	133

<sup>1</sup> The highest possible score is 180.

Table 6. Mean total scores on Gates-Strang Health Knowledge Tests<sup>1</sup> given in grades 3 to 8 in Cattaraugus County and in a control group.

case the teacher was informed in advance that the person was to visit her school on a certain day to give some special tests. There was no further information given out as to the nature of the tests or the children that would be tested.

The highest possible score for the complete test was 180. Table 6 gives the mean total scores by grades and district. Once more, with the exception of grade 3, Cattaraugus County showed a slight superiority over the control group. Although the mean score for Cattaraugus County pupils was only 10 higher than that for the control group, the odds against such a difference occurring from chance are 140 to 1.<sup>2</sup>

The questions were classified according to subject matter fields and the per cent of correct answers from pupils of grades 5 to 8 was found for each group of questions. The results of this study are shown in Figure 1. It will be noticed that there is a similarity in the curves of the experimental and control groups, but in nearly every

<sup>2</sup> Health knowledge score, Cattaraugus County  
Health knowledge score, Control

	Mean	Standard Error
	108	± 2.72
	97.9	± 2.58
Difference	9.9	± 3.57

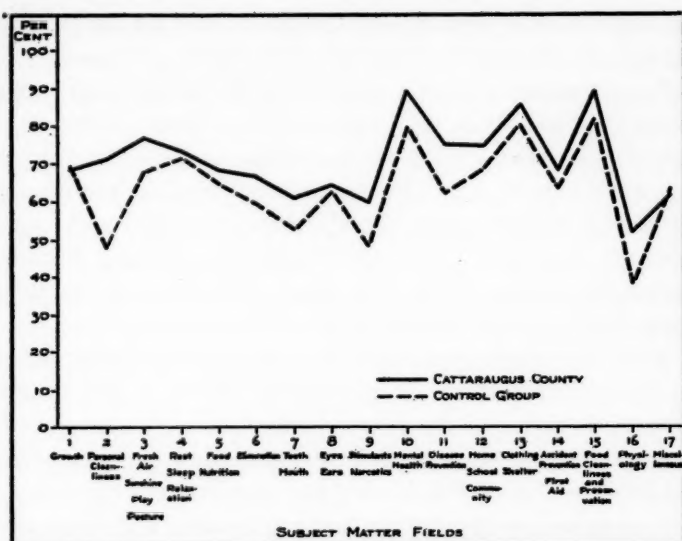


Fig. 1. Summary of Gates-Strang Health Knowledge Tests. Per cent of questions answered correctly in various subject matter fields for grades 5 to 8 in Cattaraugus County and in the control group.

instance the experimental group shows slight superiority over the control group. In Cattaraugus County the largest per cent of questions answered correctly was on the subjects of mental hygiene, clothing and shelter, and food cleanliness and preservation, while the smallest per cent of questions answered correctly was on teeth and mouth, eyes and ears, stimulants and narcotics, and physiology. There was a similar distribution for the control group except that it showed a considerable drop in relation to questions on cleanliness.

*C. Evidences Revealed Through Parent Questionnaires.* In the Spring of 1938 it was decided to turn to the parents of these rural school children for their opinion of the school's program in relation to the promotion of good health practices at home. It was thought that in the final analysis a really effective program would extend its



influences into the home life of the child, and that the parents were the logical ones to whom to turn for information on this point.

A questionnaire form was prepared for the public health nurses to use with parents on their regular visits to homes where there were children attending the one or two-teacher schools. Each nurse was asked to select ten children representative of the community she served. Children studied were of both sexes and from varying age levels, varying economic and social levels, and from different nationality groups. There were never more than two children studied from a family and ordinarily only one was used.

Space was provided in the questionnaire for general information on the child, including age, number of children in family, age range of children, and size of household. No names were required. Part I of the questionnaire included questions similar to those given the pupils on "What You Usually Do" (see Part I of this article) with some additional questions on immunization and defect corrections. These were given in order to direct the parent's thinking toward specific health practices.

Part II contained six habits, namely: number of hours of sleep, milk drinking, vegetable eating, cleaning teeth, washing hands before meals, and washing hands after toilet. The parent questioned was asked to state for each practice whether or not improvement was needed at the beginning of the school year, whether or not it was shown during the school year, and whether or not the school had helped to bring the improvement. Opportunity was given to state possible other causes for improvement, also. The parent was then asked the question "In what ways do you believe the health work at school has helped your child in his home habits? Please explain."

Altogether there were 104 children studied by thirteen nurses. They were scattered over twenty-eight townships and were taught by sixty-two different teachers with varying abilities. Ages ranged from six to fifteen with the average age of 9.9. The number of chil-

dren in the family varied from one to thirteen and averaged five.

In Table 7 one finds for each of the various practices the number of children whom the parents felt in need of improvement, the number who showed improvement, and the percentage distribution of influences responsible for the improvement. According to the parents, improvement was shown in 76.9 per cent of the cases and in 90.5 per cent of these the school helped to bring about the change. The fewest number of children needed improvement in hours of sleep, while the greatest number needed it in cleaning teeth. The greatest improvements were shown, however, in hand-washing and teeth cleaning, and the school played a prominent part in each case. The least improvement was shown in milk drinking and vegetable eating, and in these the school's influence was felt the least. In an analysis of the reasons why improvements were not shown in milk drinking it was found that only two children were reported as definitely not liking milk. In a large majority of the cases where definite reasons were given by the parent or nurse the failure of the parents to appreciate the need for milk, or the feeling of inability to pay for it predominated.

Table 7. A study of pupil health practices needing improvement as reported by parents<sup>1</sup> in Cattaraugus County.

ITEMS	NUMBER OF PUPILS NEEDING IMPROVE- MENT IN SEPTEMBER, 1937	NUMBER OF PUPILS SHOWING IMPROVE- MENT IN JULY, 1938	PERCENTAGE DISTRIBUTION OF INFLUENCES RESPONSIBLE FOR IMPROVEMENT			
			School	Other Cause	School and Other Cause	No Cause Stated
Number of Hours of Sleep	14	12	58.3	8.3	16.7	16.7
Milk Drinking	43	16	81.3	12.5	0.0	6.2
Vegetable Eating	29	10	60.0	10.0	15.0	15.0
Cleaning Teeth	72	62	77.5	3.2	16.1	3.2
Washing Hands Before Meals	46	41	75.6	0.0	19.5	4.9
Washing Hands After Toilet	43	39	87.2	0.0	10.2	2.6
TOTAL	247	190	76.3	3.7	14.2	5.8

<sup>1</sup> Total number of pupils studied: 104.

Typical comments from the mothers reflect their attitudes better than figures. In an encouragingly large number of cases the mothers point to the fact that the children, as a result of the school program, have a better appreciation of the importance of good health habits and a better knowledge of why they should be practiced. This comment is characteristic of many. "Child knows reasons for health practices now. Health practices have improved a great deal. Helps younger children with health habits."

In some cases the mothers have a very definite conception of the ways in which the school has helped, such as the mother who commented through the nurse that, "The regular monthly weighing has stimulated child's interest in growth. The planning and preparation of the school lunch made the child interested in food. Mother also feels that the handwashing has improved since the teacher made it more interesting with sample cakes of soap." Or again a nurse states that the mother of a beginner feels that "Since school began the child has been very anxious to carry out health practices—has been very careful about washing hands, brushing teeth, etc., before going to school. Has better appreciation of diet and health habits."

In other cases there is just a general feeling that some good has been done such as the case of the mother who "can't think of any specific examples of the way the school has helped, but in general feels that it helps to make a more lasting impression."

In a few instances the mothers felt that the school had done little or nothing, and in one case the mother stated that personal hygiene had been over-emphasized in the school, almost to the point of "nagging," and that the net result had been the arousing of the children's antagonism.

#### GENERAL SUMMARY

These studies represent an attempt to develop objective methods for studying health practices and for evaluating the effectiveness of

a health educational program on a county-wide basis. Regardless of their limitations in this respect, they have proved of real local value. Teachers, through applying the studies in their individual schools, have benefited from the information they have gained. New emphases have been stressed in the supervisory program as a result of the findings of the studies.

The studies have been described at some length in this article. In Part I an attempt has been made to define more clearly the health practices of elementary children in the small rural schools. An analysis of answers to pupil questionnaires was made. This showed little change in behavior between 1932 and 1936, and between the schools of Cattaraugus County and the control group of schools in Steuben and Allegany Counties in 1936.

Classroom observations of pupil health practices in 1936 showed some superiority of the Cattaraugus County group over the control group, however. This might be expected in view of the stress that has been placed in the Cattaraugus County program on improved school environment and healthful school living.

The studies in Part II have approached the question of the influences of the school on health practices of the pupils. Since these studies were made in 1936 or later no comparison could be drawn with an earlier period. Classroom observations of teachers and the school program, mental attitudes, and the school environment in the experimental schools of Cattaraugus County and in the control group of schools show some points in which both groups excelled, others in which they were weak and still others in which the Cattaraugus County group showed some superiority over the control group. There was none in which the control group showed similar superiority.

The difference in the results of health knowledge tests given to both groups was small but moderately significant statistically. The Cattaraugus County group made slightly better scores than did the control group for nearly every field of subject matter.

The parents of Cattaraugus County in 1938 believe that the school has an important influence in improving pupil health practices at home. When parents feel that over three-quarters of the pupils who needed improvement in six different home practices showed improvement during the year, and that the school had a part in bringing about the improvement in 90 per cent of the cases, there are values to the program that evidently were not apparent in the results of the statistical studies described in this paper. Unmeasurable also, in these studies is the improvement in attitudes and understandings, which in the long run help to determine behavior. A large number of parents, however, discern in their children, as a result of the school's program, a better appreciation and understanding of the reasons for good health practices.

It is to be expected that a program which has developed as this one has would show results slowly. Many teachers have been poorly equipped for carrying on a health education program. Time has been needed to arouse the interest and cooperation of all concerned, including the many new teachers continually coming into the schools. The home is an important factor, and only a beginning has been made in bringing home and school into a closer working relationship.

There are a number of hopeful indications of improvement, however. The fact that 28 per cent more teachers returned the pupil questionnaires in 1936 than in 1932 is at least one evidence of increased interest on their part. The older pupils, under the influence of the school for a longer period, show greater changes in certain habits over the four-year period than the younger pupils who are closer to the influences of the home. Although changes have been slight there is a consistent tendency toward better practices revealed throughout the studies. If the program can go on it is reasonable to expect that the improvements will continue slowly but with a cumulative effect.

# ANNOTATIONS

## SELECTIVE MIGRATION<sup>1</sup>

THERE is abundant evidence that internal migration has had a marked effect in redistributing population. How far this spatial rearrangement has resulted in a qualitative sifting has, up to the present, been less clearly demonstrated. Lack of clear-cut evidence has not, however, operated as a check upon speculation about selective migration. Examination of the literature reveals four apparently conflicting hypotheses as to the direction of this selection, in so far as it concerns cityward migration from rural areas:

- (1) Cityward migrants are selected from the superior elements of the parent population;
- (2) Cityward migrants are selected from the inferior elements;
- (3) Cityward migrants are selected from the extremes, i.e., both the superior and the inferior elements; and
- (4) Cityward migrants represent a random selection of the parent population.

If we allow a certain latitude in the definition of superiority and inferiority, we can find some empirical evidence apparently favoring each of these hypotheses in turn. In order to cover a wide field in a short time, let us arbitrarily consider some of the evidence on selection of the physically fit as bearing on the superiority hypothesis, on selection of the mentally ill as bearing on the inferiority hypothesis, on occupational selection as bearing on the extremes hypothesis, and on intelligence selection as bearing on the chance hypothesis.

The four most adequate studies of the selection of the physically fit are

<sup>1</sup> Based on a report prepared by the author for the Committee on Migration Differentials and published in August, 1938, as Bulletin 43, Social Science Research Council, New York.

based on differential mortality. Two of these studies are by A. B. Hill<sup>2</sup> with English data, one by Dorn<sup>3</sup> with Ohio data, and one by E. P. Hutchinson<sup>4</sup> with Swedish data. Hill and Dorn both proceeded on the assumption that migration to the cities is selective of young adults, and within these young adult age groups, of females. Age and sex specific death rates for rural areas, which had lost by migration, were then compared with similar rates for urban areas, which had gained by migration. The observed differential for the age-selected groups favored urban areas, in general, and especially females in urban areas, thus leading to the inference that at least part of this differential could be attributed to selective migration, and that therefore migrants to the cities represented, on the average, better physical risks than the residual population in rural areas. Both Hill and Dorn were careful to point out the indirect nature of this evidence and the impossibility of isolating migration from other important factors. In an attempt to throw further light on this hypothesis, Hill compared the same areas during periods of large and small net migration, and also correlated net migration with death rates for various areas. With the slackening of migration (or, more precisely, the diminution of net migration) the earlier observed differential tended to disappear for males, and actually to reverse for females. There being no evidence in favor of alternative hypotheses, one bearing on immunization, the other on occupational-environmental risks, Hill concluded that this situation could be accounted for by the slackening of migration and possibly by a change in the type of migrant, and that migration when extensive had been selective of the better physical risks. His correlation analysis further favored his hypothesis, since death rates were consistently negatively correlated with net migration. Hutchinson was able to control his variables better than either Hill or Dorn by dividing the Stockholm population dying from tuberculosis into natives and non-natives of the City for two years immediately following the 1920 census, correcting for post-censal change of residence, and relating these deaths by age to the appropriate census population bases. The observed differential was uni-

<sup>2</sup> Hill, A. B.: Internal Migration and its Effects upon the Death-Rates: With Special Reference to the County of Essex. London, Medical Research Council Special Report Series No. 95, 1925; also The Recent Trend in England and Wales of Mortality from Phthisis at Young Adult Ages. *Journal of the Royal Statistical Society*, 1936, Part II, xcix, pp. 247-296.

<sup>3</sup> Dorn, Harold F.: The Effect of Rural-Urban Migration upon Death-Rates. *Population*, November, 1934, i, pp. 95-114.

<sup>4</sup> Hutchinson, E. P.: Internal Migration and Tuberculosis Mortality in Sweden. *American Sociological Review*, April, 1936, i, pp. 273-285.



formly in favor of the residents born elsewhere than in Stockholm, that is, of migrants compared with presumable nonmigrants.

Regarding the selection of the "worse" elements, Malzberg's studies of insanity may be cited, although they are concerned with interstate rather than cityward migration. These studies were based on rates of commitment to mental hospitals in New York State of native whites and of native Negroes born in New York and born elsewhere. The observed differential was markedly in favor of the nonmigrant groups, and so large that the inference that age differences in the two groups (which could not be allowed for) could neither account for the whole of the differential nor possibly reverse it, seems not unreasonable. Malzberg did not interpret these results in terms of selection of the originally unfit, but in terms of the environmental strains concomitant with migration. These results cannot, however, be accepted without reservations, an important one being the possible selective commitment to mental hospitals.

Regarding the selection of the extremes, in cityward migration, the studies of Zimmerman, Gee, and others, on the occupational adjustments of migrants are often cited. Zimmerman<sup>6</sup> compared the occupational distribution of children of farmers who had migrated to the cities with that of members of the farm families who had migrated from cities to the country, and found the greatest net losses to the country among common laborers and the professional classes. One of Gee's studies<sup>7</sup> indicated relative depletion of the upper and lower classes compared with the middle class in a rural area. Bearing in mind that these studies are based on very small samples, that important variables such as length of settlement after migration, age, etc., are not controlled, that occupations and social class are loosely defined, that strictly comparable data for nonmigrants do not exist, these results can be taken only as suggestive of selection of the extremes.

Regarding chance selection, or absence of any positive or negative selection, Klineberg's<sup>8</sup> studies of the intelligence of Negro migrants are

<sup>5</sup> Malzberg, Benjamin: Migration and Mental Disease among Negroes in New York State. *American Journal of Physical Anthropology*, January-March, 1936, xxi, pp. 107-113; also Rates of Mental Disease among Certain Population Groups in New York State. *Journal of the American Statistical Association*, September, 1936, xxxi, pp. 545-548.

<sup>6</sup> Zimmerman, C. C.; Duncan, O. D.; and Frey, F. C.: The Migration to Towns and Cities, III. *American Journal of Sociology*, September, 1927, xxxiii, pp. 237-241.

<sup>7</sup> Gee, Wilson: A Qualitative Study of Rural Depopulation in a Single Township: 1900-1930. *American Journal of Sociology*, September, 1933, xxxix, pp. 210-221.

<sup>8</sup> Klineberg, Otto: NEGRO INTELLIGENCE AND SELECTIVE MIGRATION. New York, Columbia University Press, 1935.

technically superior to other studies bearing on this hypothesis. Dealing first with the school marks attained, and with the age-grade retardation of Negro children who had left Nashville, Birmingham, and Charleston for the North, in comparison with similar measures for nonmigrant children, and standardizing these measures so that temporal, regional, and grade comparisons were valid, Klineberg concluded that the migrant children formed "an average group, containing good, bad, and indifferent members of the community." There was, however, evidence of differences between the cities studied, and of improvement in quality over a period of time. Klineberg also tested the hypotheses that previously observed differentials in the intelligence as measured by intelligence tests of Northern Negroes and Southern Negroes, which favored the Northern, were a function of the superior Northern environment. To this end, an elaborate series of standardized intelligence tests was given to more than 3,000 children in the Harlem public schools, with age and sex held constant, and the groups were divided into migrants and nonmigrants, the migrants being subclassified by length of residence in New York. The consistency of the results led Klineberg to conclude that intelligence, as measured by the tests was not "selected" in the process of migration, but that it increased after settlement in a superior environment and that the "'rise' in intelligence is roughly proportional to length of residence in the more favorable environment." In spite of its general excellence, several objections to this study must be noted briefly: As Klineberg points out, he was not dealing with the initiators of migrations, but with children who presumably went passively with their parents. It must further be noted that the absence of differentials was determined largely on the basis of medians, which are unaffected by extremes, and that differentials may be expected to manifest themselves particularly in the extremes, that some of his samples were very small, that the variability of the measuring instrument is not negligible, and finally that his detailed results suggest that selection may actually have occurred in certain communities.

We have, then, evidence of a sort that migration selects the better elements, the worse elements, both the better and the worse, and also that it is unselective. Even though we may decide that the evidence cited is tenuous, it is not improbable that selection does operate positively, negatively, and randomly, at different times, depending on a variety of factors that, up to the present, have not been adequately investigated.

In the first place, the possibility that any observed differential merely

reflects an underlying demographic selection must be taken into account, and the operation of migration as selective in terms of age, sex, and civil status needs to be investigated in a more direct way than has been possible with existing American and English data. In the second place, it should be remembered that migration streams are not one-directional from country to city, and that while the net result of two opposing currents may be of slight significance from the point of view of selection, the differential between the incoming and outgoing streams may result in a major selective redistribution. In the third place, country and city, or rural and urban, are oversimplified classes for determining differentials. Much more detailed subclassifications, based on sociological and economic criteria, are needed if selection is to be adequately determined. In the fourth place, temporal factors need to be better controlled, for it is evident that the strength of selection may vary with time and it may even happen that the direction of selection may be reversed. But not only should long time trends be taken into account but short time variations corresponding to the phases of the business cycle are important. It is highly probable that apparently conflicting selective tendencies observed by different investigators are due to fortuitous timing. In the fifth place, distance spanned in migrations should be viewed as a possible modifier of the strength of selection. Finally, selection cannot be clarified unless more care is taken to determine the stage in migration experience at which the observed differentials appeared: Are migrants already differentiated from the parent population at the time of migration; do they become differentiated in the process of migrating; or do they become differentiated in the process of assimilation or adjustment in a new environment?

DOROTHY S. THOMAS<sup>9</sup>

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## A SOCIAL STUDY OF PITTSBURGH<sup>1</sup>

THIS book is a report of the most significant community study that has yet been made. The study, begun in 1934 and completed in 1936, was

<sup>9</sup> Director of Research in Social Statistics, Institute of Human Relations, Yale University.

<sup>1</sup> Klein, Philip and collaborators: *A SOCIAL STUDY OF PITTSBURGH—Community Problems and Social Services of Allegheny County*. New York, Columbia University Press, 1938, 958 pp. \$4.75.

made under the auspices of the Citizens' Committee of Pittsburgh with funds, totaling \$85,000, made available by the Buhl Foundation of Pittsburgh, "in the interest of adapting services and agencies to existing and future needs as these may be ascertainable."

In spite of its specific reference to one area and its very definite findings and recommendations applicable to that area, it is in two respects of far more than local significance. For it is, through nearly 350 of its pages, the kind of community study that "Middletown" might have been had its authors chosen to make it carefully scientific rather than reportorial. It fascinatingly portrays the social and economic background which makes social and health services both possible and necessary. Also, in analyzing these services, it offers at the same time a closely packed compendium of varying views and practices in each of the many fields covered, with a brilliant and usually convincing exposition of what, under the circumstances, is the *right* goal and the *correct* method. It is not so much dogmatic as authoritative. And although the clarity of its style and the consistency of its ideas make unmistakable the single authorship of most of its chapters, the finality with which it expresses judgment is based broadly upon the exceptional technical adequacy of the staff as a whole as well as of its director. In many a classroom in college and graduate school, it will serve as a source book on social problems and on the principles of social work which they help to define and illustrate.

The book is also significant from the angle of survey methodology. It really combines two types, the community survey and the institutional survey. By the selection of those community data which most obviously condition social and health services, it makes them contribute to the reader's understanding of the institutional problems discussed. Thus Part I anticipates and reinforces Part II. However, one cannot help but wish that in Part II more frequent and more specific reference had been made to those aspects of community conditions pertinent to specific issues under consideration. In other words, though the community survey admirably sets the stage for the institutional surveys, the action in them portrayed is too little related to this carefully elaborated setting. Another methodology of vital interest is the effort to coordinate professional and lay talent in the actual work of institutional surveying. It is revealed at its best in the cooperation between the Citizens' Committee and the survey staff. "With one (minor) exception, every recommendation submitted by the staff of this study was accepted and approved by

the committee, and practicable steps were devised by it for promulgating them and carrying them into effect." (p. 879) It is least in evidence in the more technical studies, especially in the fields of the organized care of the sick and of public health administration. It is most in evidence in the study of leisure-time activities where the survey staff seems largely to have surrendered its functions to committees of local group workers in the voluntary agencies, and with unfortunate results. At all events, it so narrowed the field of investigation in the city of Pittsburgh, as distinct from the outlying county areas, as to leave virtually untouched the broader problems of leisure, involving the schools with their extensive recreational and informal educational programs, the parks and playgrounds, the libraries and museums, industrial and private club facilities for recreational activity, and last, but most significant of all, commercialized recreation and the quantity and quality of its offerings. No doubt the group-working agencies gained in interest in and grasp of their problems. It seems obvious, however, that the degree of cooperation practiced was too costly in terms of the technical adequacy of the survey report.

A further comment on methodology is necessary. The classification of agencies offered in Chapter I and repeated in Chapter IX is highly unsatisfactory, especially in its futile effort to distinguish between agencies "securing minimum amenities of life—cultural and educational" and those "raising basic standards of life in the community" and in its attempt to put into a separate classification those agencies concerned with "efforts to build a better social order." This latter would seem to deprive the majority of social agencies of any other than a practical interest in immediately present needs. In reality each, in order to be practically efficient, must have a social philosophy, goals more distant than the daily task. But it doubtless is a sufficient commentary on this classification that the author says of it: "Oriented to practical purposes and to proposed changes, the text will not seek to follow a pattern parallel with the groupings discussed in the preceding pages." (p. 357) It might profitably have been omitted altogether.

It is noteworthy also that Dr. Klein sees certain fundamental limitations to the scope of such studies as this. For example, he says: "It is impossible to know the conditions of the population except when those in distress are sufficiently troubled so that they attempt to obtain help from the outside." (p. 8) Surely, that was not the source of the motivation

of the first housing investigations in New York City. The very genius of the community survey lies in its ability to discover what without its intervention would remain unknown. And again he says: "All hope of direct measurement must be banned, even in the more obvious fields, as a means of judging the adequacy of social services." This is true only in the sense that "adequacy" is itself a relative term derived from the corporate experience of the community. But it is untrue to the extent that there exist generally accepted criteria of adequacy in many fields and that certain quantitative factors are directly measurable. For example, the late Dr. C. Luther Fry of Rochester devised for that city, in terms of each of its eighty-eight census tracts, a series of ten social indices whereby each tract was ranked in comparison with all the others. Since that time in the course of a survey of Rochester's "character-building" agencies, this reviewer has listed for each of these census tracts the proportion of its population in the membership of each (and all) of these agencies. Dr. Klein himself used a similar technique in studying the comparable agencies in Pittsburgh, though he used but one social index (the incidence of cases of relief). The point is that this certainly constitutes "a direct measurement . . . as a means (one among many, the majority of which, it is true, are indirect) of judging the adequacy of social services." The issue is important due to a prevalent tendency to deny that social phenomena can be in any way directly measured. On this account direct measurements, however partial, have significance for methodology.

But, in the face of the unique and truly stupendous task comprised in this Social Study of Pittsburgh, it is unfair to emphasize points of criticism such as these. To attempt to give some further idea of the richness and variety of the material presented would be both more pertinent and more useful.

Part 1, Social and Economic Background—after devoting a chapter to the scope and perspectives of the study—describes Allegheny County as a place in which to live, its physical setting, its historical development, the nature of its suburban and county communities, its manufacturing towns, its mining villages, its townships and other forms of government. It then proceeds to discuss the chances for earning a living in the County, the meaning of unemployment and the extent of it, and the relation of income to need. It then discusses the whole development of social legislation and of labor organization in the County, offering wise and pertinent

comment on workmen's compensation, health, old-age, and unemployment insurance. One comment particularly deserves quotation:

Whatever progress may be made toward the establishment of health insurance in this community, it is not likely to come as an isolated phenomenon but as part of a larger movement, inevitable in the end, of translating the progress of medicine into prevention of disease, advancement of health, public-health administration, and medical service as a social function rather than merely as a commodity bought and sold in the open market. (pp. 167-168)

In the following chapter, the physical conditions of life in the County are vividly portrayed, especially as they involve housing and public sanitation. Slums remain a noisome and discouraging fact. Something has been accomplished but the major task remains undone—"not a single task, but many tasks, for there is no royal road." Chapter vi ably discusses social and ethnic stratification, making all too clear the discriminations under which the foreign-born and those of foreign parentage and the Negroes continue to live. This is followed by a completely frank and intensely critical chapter upon social attitudes, public opinion, and pressure groups. "We must be prepared, therefore, to expect, as indeed we shall find, that in social work, as in the general fields dealing with immigrant, Negro, unemployed, and the poor in general, and also in civic programs and legislation, in public education and in the leadership offered to the masses, public opinion is politically and philosophically conservative and often militantly orthodox; that the chances for the introduction of changes that are, or seem to be, out of harmony with this prevalent attitude, are slight." (p. 292)

Part I closes on a more hopeful note in a chapter devoted to an example of progress—the Pittsburgh public schools.

Part II begins with a panoramic summary of social work in Pittsburgh and Allegheny County, and proceeds to an analysis of the cost and support of social work, discussing the changing relation between public and voluntary funds, the connection between support and control, and wisely concludes that the public source of the majority of social work's financial support makes imperative a deeper concern on the part of social workers for "budgets, appropriating bodies, and technical procedures of the public authorities sponsoring work in their field." (p. 397)

Consideration is next given to planning and coordination of social work, one of the most significant chapters in the book by virtue of its



prophetic emphasis upon the importance of coordinated and cooperative, continuing and informed community planning, not afraid of frank evaluations and basic modifications to meet the changes in a changing world. Then follows a chapter on the personnel of social agencies and facilities for professional training, showing a generally high percentage of college graduates, but only 40 per cent with any training whatever in a professional school, and "salaries . . . are low compared with those in many other communities."

Chapter XIII deals with relief and social case work, recommending a rather complete divorce of the two functions (which, to this reviewer, seems definitely to threaten standards of relief though of course it saves the case workers from their more routine tasks of relief administration), and pleading for a public relief free from the unreasonable phases of restrictions now imposed by law. The next chapter discusses the problems and practices of relief, being on the whole critical of public indoor relief, of commodity rather than cash relief, and of low standards of relief as found in Pittsburgh. There follows an exposition of the fundamental principles for the reorganization of the care of dependents, and an urgent recommendation for the creation of county departments of public assistance, of health and of hospitals, for the transfer of the administration of medical relief to the Department of Health in the city of Pittsburgh, and for the surrender of responsibility for home relief of the economically dependent by the voluntary agencies to the county department of public assistance. As far reaching as any other recommendation of the entire study, this is based upon the assumption that "the entire obligation for providing economic assistance to those in need is . . . a public function." This would leave social case work (including medical case work and personal adjustment) as a function distinct from relief. It is reported that "psychiatric social work is . . . practically nonexistent in Pittsburgh and Allegheny County except for children and to a very limited extent as a part of family social work." (p. 649)

Chapter XVII, *Social Work for Children*, is an admirable treatise on the guiding principles and the variant practices in this broad field. Nor does it fail to analyze the local situation, finding upward of forty agencies and institutions active in the field, each independent, making all but impossible coordinated planning and community perspective. It therefore recommends the organization of a family and children's division in the Federation of Social Agencies.

The next two chapters deal with related problems, the organized care of the sick and public health administration, both being condensed statements of reports earlier made public. They are impressive to the layman both by virtue of the distinguished medical specialists who cooperated in their preparation and in their own right. Certainly they make unmistakably clear the vital inter-relatedness of social and health agencies. In briefest summary, the organized care of the sick in Pittsburgh compares unfavorably with that of seven other cities both as to the rate of illness and the amount of medical service received. There has been a poorly coordinated development of facilities in the voluntary hospitals, while serious overcrowding exists in the tax-supported hospitals for general care. There is a pronounced lack of facilities for mental diseases and a definite need for clinics providing general diagnostic service. In spite of the admirable service rendered by the Public Health Nursing Association (a voluntary organization), there is a lack of provision for the home care of the dependent sick. There is obvious failure to plan equitably for the care of Negroes and for the training and progressive study of Negro doctors. Group insurance for hospital care is urged. Public health administration in Allegheny County is subject to 123 separate governmental units, a relatively uniform urban population of 1,278,000 being served by ninety-one public health bodies. Of the 123 municipalities, more than two-thirds spent in 1934 less than 30 cents per capita for public health, as against a conservative "standard" of \$1 per capita. "But with a trained and experienced director of health and a trained staff, working in a city-county health department with district branches, the county could be far more effectively served even on this budget." (p. 783) Also, "there is a striking lack of a coordinated, comprehensive health education program . . ." (p. 834)

To Chapter xx, dealing with leisure-time activities, some reference has already been made in relation to problems of methodology. Its theoretical statement as to the nature and varieties of leisure is unimpressive. The effort to stress the importance of "facilities for recreation" as contrasted with educational, religious, and "character-building" activities, is futile since such "facilities," apart from their intelligent and purposeful supervision, are as meaningless as schoolrooms without a curriculum. Yet the major conclusions of the chapter are sound and impressive. There is "need for a general increase in the facilities available," preference to be given "in the extension of leisure time facilities to those types of service

and of agency that are most likely to reach the largest possible group of the community, those least favored economically and least adequately provided for by the existing agencies." (p. 875)

The Epilogue reports the as yet not very impressive progress made by the community in putting into practice the recommendations made to it. There is reason to feel that its comments are a trifle premature. The seed, once planted, should for a longer time be undisturbed.

No careful reader of the book could fail to be impressed with the sincerity and forthrightness of its utterances and the careful gathering and analyzing of data upon which they are based. It is no exaggeration to say that the finished report is thrilling in what it has accomplished in social pioneering and in what it portends both for Pittsburgh and for the fields of social and health service everywhere.

ARTHUR L. SWIFT, JR.<sup>2</sup>

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## THE FAMILY AND THE DEPRESSION

IN SPITE of the interest of social scientists in problems raised by the depression, our knowledge of the impact of the recent economic crisis upon family life remains meager and inadequate. Available data and fields for further research along these lines have been summarized in a research monograph on the family<sup>1</sup> comprising one of thirteen studies on "The Social Aspects of the Depression" which were instigated and sponsored by the Social Science Research Council. This volume clearly indicates the need for more adequate studies of family life, particularly during normal times in order to obtain a basis for determining and understanding the deviations which occur during critical periods. Students of the effect of the depression upon family life have been handicapped by lack of background material and hence have tended to confine their studies largely to the particular period of the depression without reference to earlier conditions.

In an effort to present a more fundamental picture than could be obtained from an investigation of the depression period alone, a recent

<sup>2</sup> Union Theological Seminary, New York City.

<sup>1</sup> Stouffer, Samuel A. and Lazarsfeld, Paul F.: *RESEARCH MEMORANDUM ON THE FAMILY IN THE DEPRESSION*. New York, Social Science Research Council, 1937. 221 p.

study, *THE FAMILY AND THE DEPRESSION*,<sup>2</sup> was undertaken by a sociologist and a psychiatric social worker during 1934-1935. The objective of the study was to investigate "the ways in which families and the individual members of families adjusted or failed to adjust themselves to the depression considered not primarily as an economic crisis but as a crisis in the organization and aims of family life." In contrast to previous studies which have tended to "present the depression as a discrete experience unconnected with the past or future life of the family," these authors regard the impact of the depression as an integral part of the continuous experience of the family group.

In order to achieve their purpose, it was necessary for the investigators to select families concerning whom information was available before the depression. Consequently, one hundred families were chosen from the records of the Institute for Juvenile Research in Chicago, covering cases examined at the Institute during the period from July, 1927, to November, 1928. Only white families were included and only those: (1) which formed a natural family group of father, mother, and at least one child; (2) which was a young family group; (3) which lived within a radius of fifteen miles from the center of the city; and (4) which had a detailed pre-depression record. Presumably the one hundred families were chosen in serial order when the given requisites were met, but the discussion of methodology leaves this point in doubt. After these records of 1927-1928 had been analyzed and after the cases had been re-cleared with the social agencies in order to secure all available information, the families to be included in the study were interviewed at length by the psychiatric social worker.

This selection of cases from the records of the Institute for Juvenile Research meant that each family had at least one problem child who had been referred to the Institute as maladjusted or delinquent. The representativeness of families selected on such a basis was tested by a comparison with other population groups in Chicago in regard to residence, birthplace of father, religious affiliations, employment of mother, and occupation of father. The authors conclude that the families used "are as a group fairly representative of the national, religious and economic classes of the city as a whole." This would seem to be true in regard to

<sup>2</sup> Cavan, Ruth Shonle and Ranck, Katherine Howland: *THE FAMILY AND THE DEPRESSION; A Study of One Hundred Chicago Families*. Chicago, The University of Chicago Press, 1938. 208 pages. This study was conducted under the joint auspices of the Illinois Institute for Juvenile Research and the Social Science Committee of the University of Chicago.

nativity, religion, and residence of the families but is more doubtful as far as occupational status of the father is concerned. The proportion of unskilled laborers in the study was higher than in the City as a whole, and the sample also seems to have a high proportion of children who were mentally dull or retarded. If family case records are to be used in any study, it is almost inevitable that some kind of bias will be involved, since such records are usually available only in agencies or institutions which handle specific problems. With the present lack of material on ordinary families not connected with social or welfare agencies, such intensive studies of family groups must probably be limited to certain types of families.

The authors have analyzed their material according to: (1) types of family organization prior to the depression; (2) types of crisis met; (3) types of reaction to the crisis; and (4) types of adjustment. For each of these classifications numerous and interesting case records are cited as illustrative of the points made. After discussing these four stages, the authors have cross-classified the families in an endeavor to get typical reactions when the depression is viewed as merely one incident in a continuous pattern of activities and attitudes. This final bringing together of the family histories in a unified record is especially valuable after the detailed, disparate analyses contained in the earlier sections.

Later chapters of the book include a brief analysis of the attitudes of these families towards the depression, relief agencies, and social reform; an analysis of the young people of marriageable age found in these one hundred families; and a short account of the mobility of the families. While the material in these three chapters is interesting, its value is limited by the small number of cases involved. The final chapter summarizes various studies along similar lines and compares the methods and findings of this investigation with others. This chapter increases the value of the attached bibliography and orients the present study in the field of investigations of the depression and the family.

The principal conclusions of this analysis of one hundred families have been summarized as follows: (1) well-organized families met the depression with less catastrophic consequence than families that were already disorganized; (2) families and their members tended to react to the depression in much the same way as they had to previously encountered crises; and (3) the period of unadjustment and disorganization characterized by emotional strain which typically was manifest in the early

stages of the depression generally was succeeded by a period of adjustment or maladjustment. These conclusions conform so readily to common sense impressions that they may probably be applied with reasonable safety to other families. Although the data contained in this study have been carefully and exhaustively analyzed, the number of cases is too small to furnish adequate proof of each type of reaction, as the authors themselves point out.

LOUISE KENNEDY KISER

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## TWO MEDICAL STATISTICAL BOOKS<sup>1</sup>

THE introduction of the medical worker to the field of elementary statistical analysis is not a difficult problem to solve. It entails providing him with (1) a grounding in terminology, (2) an introduction to statistical methods and, to borrow medical usage, their "indications and contraindications," and (3) an introduction to the increasingly specialized literature of the field.

Dr. Mainland's book, *THE TREATMENT OF CLINICAL AND LABORATORY DATA*, meets all three of these requirements well, and the attention paid throughout to the problem of small sample study adds greatly to its usefulness. *PRINCIPLES OF MEDICAL STATISTICS* by Hill meets the first two requirements well and includes, among methods, discussions of life tables and standardization of rates although the "indications" for the use of both of these methods could have been made more comprehensive.

Both books adequately show the need for an understanding of statistical methods on the part of the medical worker. They also explain that analysis is but the last of a series of steps in statistical procedure, the first of which should consist of planning the study or experiment, and the next of collecting the data. A third preliminary step, and one which deserves more attention than it usually gets, is the recording of the data for much is lost in this process of making the data available. These steps which precede that of analysis are not accorded the same attention by the two authors. Mainland regards them as peculiarly in the province of the

<sup>1</sup> Mainland, Donald: *THE TREATMENT OF CLINICAL AND LABORATORY DATA*. Edinburgh, Oliver and Boyd, 1938, 340 pp.

Hill, A. Bradford: *PRINCIPLES OF MEDICAL STATISTICS*. London, The Lancet Limited, 1937, 171 pp.

medical worker, while Hill ventures somewhat more boldly into this phase of the work with most useful comments on selective factors and pitfalls. The fact is that medical observations, particularly when embodied in clinic records and notes, are highly individual things well adapted to a highly individual end. The manner in which each item of observation takes its place, prediscouted for its clinical limitations, in a delicate process of induction leading to a diagnosis, prognosis, or opinion on the effect of therapy, is beyond the reach of anything but the admiration of the statistician. These same records, collectively used for analysis, however, are likely to be his despair, for here individual items of observation must be able to stand alone or carry a good degree of certainty. This means, often, some modification of the usual clinical method of observation or collection, inclusion of a number of items of little clinical value, and usually, also, a very definite modification of the method of recording. The result is primarily a statistical, not a clinical, record. Although work with routine medical records is admittedly a special case, enough has been said to show that the statistician has more to offer the medical worker than suggestions on the final phases of his study. It is this preliminary aspect of the work which has to be treated in medical terms, for that is where the special techniques of medicine with their special limitations are applied. Both authors feel that R. A. Fisher's *DESIGN OF EXPERIMENTS*<sup>2</sup> covers this aspect satisfactorily but the examples here are largely taken from other applications of statistics, and the problems peculiar to the medical worker's field are few indeed. It is more difficult for the medical man to translate into his own ideology the ideal plan and execution of an agricultural or economic experiment than to convert to his own uses the concepts of the statistical analyst: urns, dice, coins, and all.

RALPH E. WHEELER, M.D.

<sup>2</sup> Oliver and Boyd, Edinburgh, 1937.



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